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**PRELIMINARY WORK PLAN FOR SOILS AND
GROUNDWATER CHARACTERIZATION
ITT AEROSPACE CONTROLS
BURBANK, CALIFORNIA**

Project No. 2588-08-05

14 June 1990



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PRELIMINARY WORK PLAN FOR SOILS
AND GROUNDWATER CHARACTERIZATION
ITT AEROSPACE CONTROLS
BURBANK, CALIFORNIA

CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

Project No. 2588-08-05

14 June 1990

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Table of Contents

<u>Section</u>	<u>Title</u>	<u>Page</u>
1	EXECUTIVE SUMMARY	1-1
2	SITE DESCRIPTION	2-1
	2.1 Site Location	2-1
	2.2 Work Plan Objectives	2-1
	2.2.1 Future Work Plan Objectives	2-3
	2.3 Site History	2-3
3	PHYSICAL SETTING	3-1
	3.1 Regional Setting	3-1
	3.1.1 Physiography	3-1
	3.1.2 Regional Geology	3-1
	3.1.3 Regional Hydrogeology	3-4
	3.2 Site Geology and Hydrogeology	3-6
	3.3 Off-Site Groundwater Well Survey	3-7
	3.4 Surface Water	3-8
	3.4.1 Groundwater Recharge	3-9
	3.5 Climate	3-9
	3.6 Flora/Fauna	3-14
	3.7 Zoning	3-14
	4.1 Previous Work Performed	4-1
	4.1.2 Previous Work Performed by Harding Lawson Associates	4-1

Table of Contents (continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
4.1.3	Previous Work Performed by Leroy Crandall and Associates	4-1
4.1.4	Previous Work Performed by A.L. Burke Engineers	4-2
4.1.4.1	Building 8 Area	4-2
4.1.4.2	Building 5 Area	4-2
4.1.4.3	Site Wide Program	4-3
4.1.4.4	Buildings 2 and 3 Area	4-3
4.1.5	Previous Work Performed by Roy F. Weston, Inc. (WESTON)	4-6
4.1.5.1	Soil-Gas Survey	4-6
4.1.5.2	Residue Sampling of Buildings 1, 2, and 3	4-7
4.1.5.3	Building 8 Area	4-7
4.2	Areas of Investigation Identified by Previous Work	4-8
5	SITE INVESTIGATION	5-1
5.1	Soils Investigation Objectives	5-1
5.2	Groundwater Investigation Objectives	5-3
5.3	Field Investigation Tasks	5-3
5.3.1	Perimeter Monitoring Wells (Task 1)	5-3
5.3.1.1	Perimeter Wells Soils and Groundwater Analytical Program	5-5
5.3.2	Soil Borings	5-6
5.3.2.1	Soil Boring Analytical Program	5-8
5.3.3	Source Monitoring Wells (Task 3)	5-8

Table of Contents (continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
	5.3.3.1 Source Wells Analytical Program	5-10
5.4	Sampling Methodology	5-10
5.4.1	Soil Borings	5-10
5.4.2	HydroPunch Sampling	5-11
5.4.3	Monitoring Wells	5-12
5.4.3.1	Well Installation	5-12
5.4.3.2	Monitoring Well Development	5-13
5.4.3.3	Water Level Elevations	5-14
5.4.3.4	Groundwater Sampling	5-14
5.4.3.5	Engineering Survey	5-15
5.4.3.6	Monitoring Well Permits	5-15
5.4.4	Waste Handling Procedures	5-16
5.4.5	Field QA/QC Procedures	5-17
5.4.5.1	Documentation	5-17
5.4.5.2	Decontamination	5-18
5.4.5.3	Duplicates, Splits and Blanks	5-19
5.4.5.4	Chain-of-Custody	5-19
5.4.6	Laboratory QA/QC	5-20
5.5	Analytical Methods	5-20
6	SITE INVESTIGATION SCHEDULE	6-1
7	REFERENCES	7-1

List of Figures

<u>Figure</u>	<u>Description</u>	<u>Page</u>
2-1	Area Location Maps	2-2
2-2	ITT Facility Map	2-5
3-1	Physiography Map, San Fernando Valley	3-2
3-2	Locations of Groundwater Wells Near ITT Site	3-10
4-1	Locations of Previous Soil Borings in Building 2	4-4
4-2	Locations of Previous Soil Borings in Building 3	4-5
4-3	Locations of Areas of Investigation	4-9
5-1	Flow Chart for Sequence of Field Tasks	5-2
5-2	Proposed Soil Boring and Monitoring Well Locations	5-4
5-3	Chain of Custody Form	5-21
6-1	Site Investigation Schedule	6-2

List of Tables

<u>Table</u>	<u>Description</u>	<u>Page</u>
3-1	Preliminary Off-Site Well Survey	3-11
3-2	Public and Medical Facilities	3-15
5-1	Recommended Analyses for Soil Samples	5-9
5-2	Chemicals of Concern and Analytical Methods	5-22

SECTION 1

EXECUTIVE SUMMARY

This Work Plan was prepared in response to the letter directive of 14 May 1990 from the Los Angeles Regional Water Quality Control Board (RWQCB) and the correspondence of 15 May 1990 from the Los Angeles County Health Department (CHD). The Work Plan incorporates the work elements proposed in the Site Characterization Report and Action Plan for the ITT Facility Burbank, CA, (WESTON, 1989). Additional work tasks have been included to address issues raised by the RWQCB.

ITT Aerospace Controls is located on 1200 Flower Street, Burbank, CA. However, the General Controls Division had been the primary occupant since the early 1930's. ITT purchased General Controls in 1963. Various manufacturing processes have been conducted at the site. Numerous buildings have been demolished and less than half of the previous building space is now occupied.

A new facility for ITT had been planned for the site, demolition of buildings had begun in preparation for the proposed construction. As a part of the proposed redevelopment of the site, subsurface investigations had been initiated including tank removals, soil borings, shallow soil samples, and most recently a soil-gas survey. These investigations have identified several areas that contain chemical residues, primarily chlorinated solvents and to a lesser extent aromatic hydrocarbons.

This Initial Work Plan outlines the tasks to be completed to assess the soils and groundwater at the site. The areas of investigation have been identified based on the previous soils data and the soil-gas survey.

The technical approach to address the areas of investigation will include the following tasks:

- TASK 1: Perimeter Monitoring Wells
- TASK 2: Source Area Soil Borings and HydroPunch Sampling
- TASK 3: Source Area Monitor Wells

Task 1 is the installation of perimeter monitoring wells to establish compliance points. This task will examine the water quality migrating onto the site and characterize the water quality leaving the site. In addition, the northernmost well location will be sampled to establish background metal levels in the subsurface soil. The wells will provide the preliminary site gradient to optimize the source well locations.

Potential source areas will be examined during Task 2. Eleven borings will screen the potential source areas and examine the extent and magnitude of chemicals in the soils at the identified areas. In addition, a preliminary screening of the groundwater will be performed using the HydroPunch sampling tool. The groundwater samples will be screened for volatile organic compounds (VOCs) on a rapid turnaround basis. Expedited analytical results will be used to assess source area well locations.

Task 3 will be the source area wells installation. These wells will characterize the water quality in the areas of investigation and provide further information on the hydrogeology of the site. The number and location of the source wells will be evaluated using the groundwater screening data and the preliminary site gradient. The locations will be submitted to the RWQCB, as selected, for approval in order to proceed with installation of the source wells without interruption of the field program.

The data collected from the activities described in this Work Plan will be evaluated and assessed for future needs on the site. A supplementary work plan will be submitted to satisfy any additional data needs identified and potential remedial alternatives, if required.

Sections 2 and 3 provide background information on the site. The areas of investigations are described in Section 4, while Task 1, 2, and 3 are discussed in Section 5. The schedule to complete the tasks presented is found in Section 6.

SECTION 2

SITE DESCRIPTION

2.1 SITE LOCATION

The ITT Aerospace Controls Division facility is located in the eastern San Fernando Valley at 1200 South Flower Street, Burbank, California (Figure 2-1). The site consists of 11.7 acres of land and is bounded by Alameda Avenue, Flower Street, Allen Avenue and the Southern Pacific Railroad Mainline. The boundary between the cities of Burbank and Glendale lies across the southern portion of the site parallel to Allen Avenue.

2.2 WORK PLAN OBJECTIVES

This Work Plan outlines the next phase of subsurface investigations to be initiated at the ITT Burbank site. The focus of this Work Plan is to evaluate the potential source areas identified in previous boring investigations and the soil-gas survey. The goal will be to acquire chemical and lithological data in the identified source areas to assess the potential impact on the soils and groundwater, collect preliminary hydrogeological data and acquire specific data required to screen and evaluate appropriate remedial technologies, if necessary.

In order to accomplish the objectives described above: 1) perimeter monitor wells will be installed to address compliance points, 2) soil borings will be drilled and sampled in suspected source areas to confirm or deny the findings of previous soils and soil-gas results, 3) soil borings will be advanced to the water table and groundwater samples will be collected with a HydroPunch sampling device for preliminary groundwater screening in order to site source area monitor wells, if appropriate and 4) based on the preliminary groundwater screening and site gradient, determined from the perimeter wells, source area monitoring wells will be installed to characterize the groundwater quality.

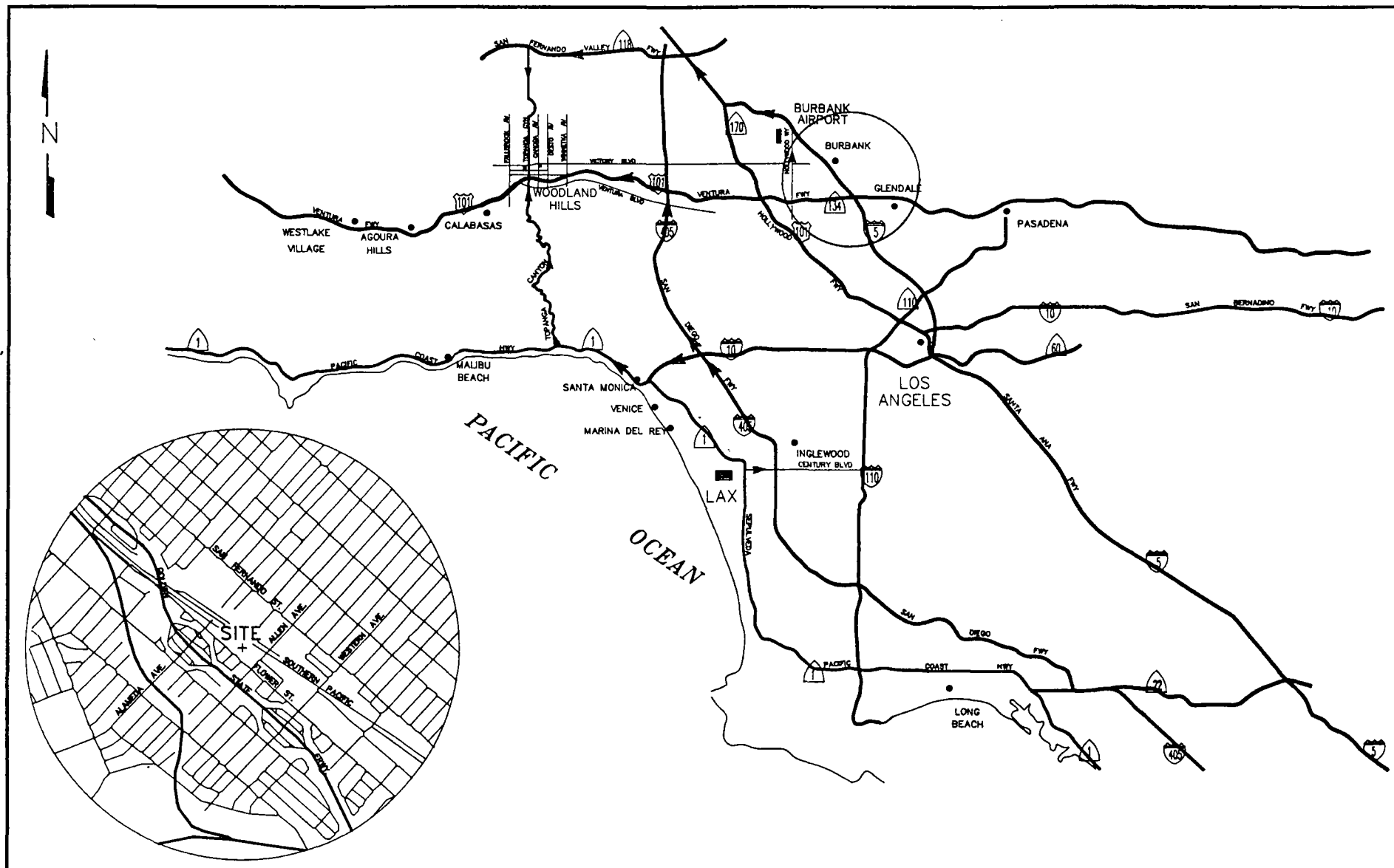


FIGURE 2-1: AREA LOCATION MAP FOR ITT AEROSPACE CONTROLS - BURBANK, CA

Although several investigations have been conducted on the site, results of the soil-gas survey indicate several areas which have not been previously addressed. Additionally, the areas examined by previous borings had not completely assessed the vertical extent of chemical constituents in the soil. For this reason, this Work Plan is considered an initial subsurface investigation.

2.2.1 Future Work Plan Objectives

The results of the initial subsurface investigation will be evaluated and a more comprehensive work plan will be submitted which will describe the technical approach proposed to satisfy any additional data needs identified and to develop potential remedial alternatives if needed. In order to address the entire site in the comprehensive work plan, additional soil characterization will be necessary in the Building 8 area. Preparation of a supplementary work plan to further assess the subsurface soils in the Building 8 area will be initiated and will be submitted to the County of Los Angeles Department of Health (CHD) and Los Angeles Regional Water Quality Control Board (RWQCB) under separate cover.

2.3 SITE HISTORY

In the early 1930s, the General Control Company purchased what was previously residential property and established manufacturing operations at the site. General Controls manufactured automatic pressure temperature and flow controls for heaters and industrial boilers. In the 1940s, the company expanded its operations to include an aerospace valve product line.

ITT purchased General Controls in 1963. Most of the buildings on the site were built while it was owned by General Controls with the exception of Building 16, which was added in 1967 while under ITT ownership. ITT General Controls experienced difficulties in the thermostat and pressure control market in the late 1970s and early 1980s. The company

ceased manufacturing operations at the site and relocated distribution operations to Santa Clarita in 1989.

In 1986, ITT Aerospace Controls was formed as a new division of ITT and began operations in the northern section of the property. Aerospace Controls currently operates out of Buildings 4, 5, 6, 14, 15, and 16 (Figure 2-2).

In 1986, ITT initiated a tank removal program in order to demolish existing structures and prepare for construction of new facilities. In 1987, ITT Aerospace Controls assumed responsibilities for the areas formerly occupied by ITT General Controls, and proposed to build a new building on the site of Buildings 1, 2, and 3. Buildings 10, 11, 12, and 13 were demolished in 1988, while Buildings 8, 9, and 9A were demolished in 1989. Five USTs were removed with the approval of the City of Burbank and the City of Glendale Fire Departments prior to demolition of these buildings.

The following section discusses the present and past functions of each building:

- Building 1: This building was utilized for administrative offices. Accounting, personnel, executive offices, the computer systems group, human resources and various other administrative functions were housed in this building. The building was vacated in 1989.
- Building 2: Building 2 was used as a machine shop. Items produced in Building 2 were primarily thermostats, residential and commercial gas valves, and oil field steam valves. Most of the manufacturing operations were discontinued in 1986, and dismantled with the exception of a parts washer which was used until 1988. Processes over the years have used trichloroethene (TCE), tetrachloroethene (PCE), trichloroethane (TCA), diesel fuel, butane, kerosene, cutting oil, motor oil, sulfuric acid, nitric acid, and muriatic acid, among others.

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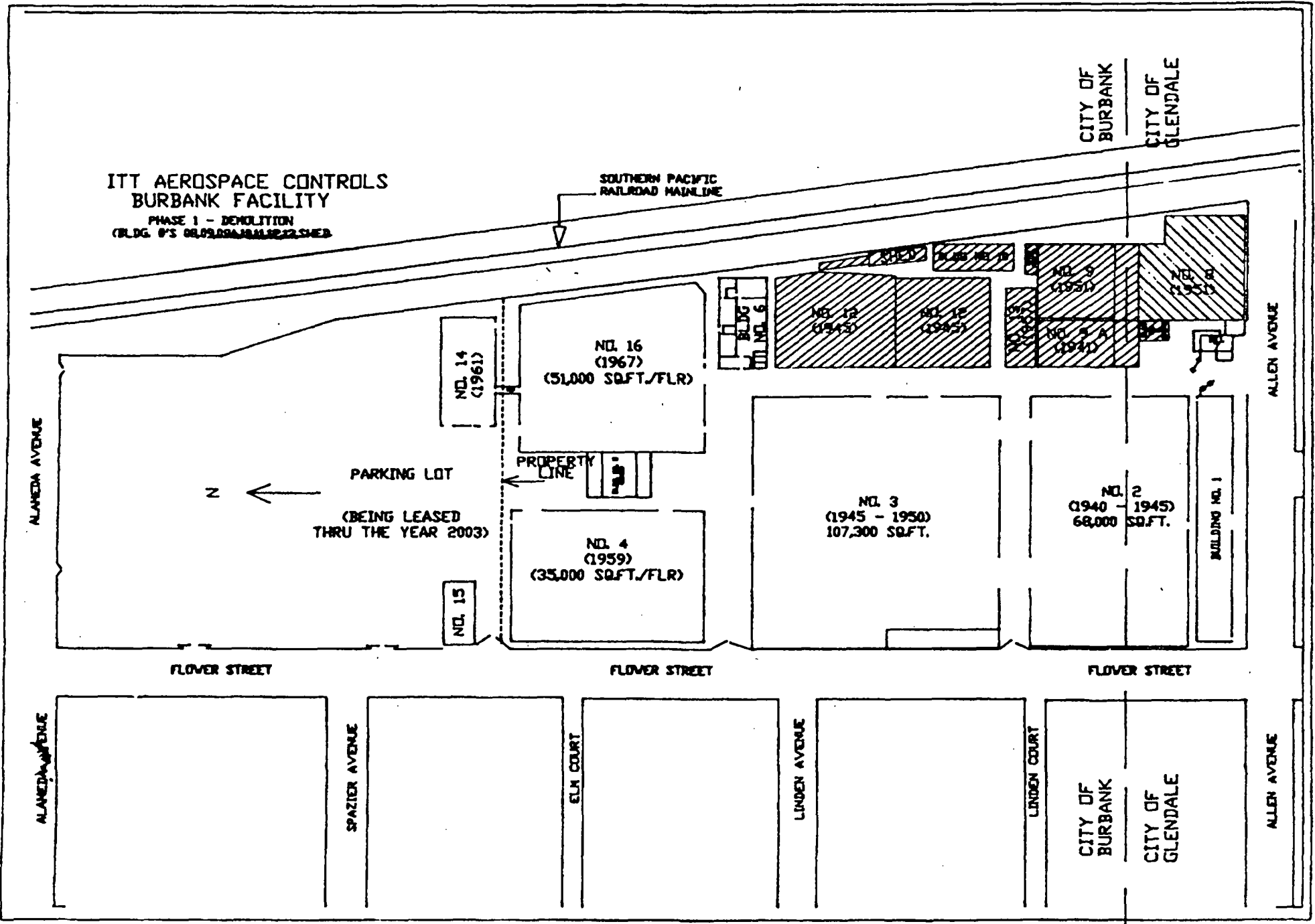


Figure 2-2 ITT Facility Map

The majority of the equipment has been removed except the parts washer in preparation for total demolition. A portion of the southern side of the building has been removed. Within the building there is a small basement located in the central portion of the building adjacent the alley which formerly housed a tool crib.

A groundwater well is located in Building 2, although it is no longer in use. Based on field measurements, the well appears to be silted in to a depth of about 31 feet. No chemical analyses are available. Reportedly, the well was used as a water supply.

- Building 3: The majority of Building 3 (western side) was used initially as the main assembly shop and then as a storage area. Operations housed there have included stock and storage, production control, fabrication processing, receiving, receiving inspection and shipping. The southeastern corner of Building 3 was used as the metal finishing area, including processes such as heat treating, impregnating, Brite dipping, welding, painting, degreasing, sand blasting and rock tumbling (deburring). The northeastern side of Building 3 housed the plating area. Processes performed here included the use of materials such as chromic acid, alkaline cleaners, sodium bisulfite, muriatic acid, phosphoric acid, zinc sealers, nitric acid, TCE, PCE, isopropyl alcohol, lubricating, cutting and motor oils, sodium cyanide, zinc cyanide, barium carbonate, zinc chloride, sulfuric acid and acetic acid among others. The manufacturing side of the building was vacated in 1986, with the storage areas being vacated in 1989.
- Building 4: The bottom floor of this two story building is currently being used as a machine shop for ITT Aerospace Controls. Processes being performed here include the fabrication of valve castings and raw bar stocks using machining equipment. Processes also include deburring, drilling, inspection, and inspection testing with fluids. There is also a small cafeteria

area with vending machines located on the southeast side of the building. The top floor of this building was vacated in the late 1970's due to structural concerns. This floor remains vacant and previously housed general light assembly and administrative offices.

- Building 5: This building houses the maintenance department as well as the open process tank line. This line performs passivation and irradiation using sulfuric, nitric and chromic acids. There is also a waste water treatment system in this building. At one time the research and development lab was located in this structure. Outside of Building 5, directly north is the coolant, scrap metals and hazardous waste yard. This yard was designed for use by Aerospace Controls and was not used by General Controls.
- Building 6: This building currently houses an Aerospace Controls inspection and engineering semi-clean room, as well as an R&D lab and a small cleaning room. Operations once housed in this building included coil assembly and the field return and repair department.
- Building 7: This small building is located just west of Building 8. Operations formerly housed in this building included computer systems, credit union office, the first aid and nurse's office as well as an office for the security guards. This building has been vacated.
- Building 8: This structure was formerly the die cast building. The maintenance department was housed in the eastern side of the building. The die cast operation, which began in 1952, consisted of the formation of aluminum dies. This process utilized materials such as kerosene and oil, silicone, Pydrol and Quaker hydraulic oils. Pydrol was used in the die cast machines as of 1952 and until 1977, when Pydrol was discontinued and replaced with Quaker hydraulic oil. The Quaker "Quinotlubric" (no PCBs) oil was used until 1982 when it was replaced and GC began using a mixture

of glycol and water. The glycol was used until June 1986, at which time the operation was shut down.

- Building 9: Building 9 was used as a cafeteria. There was a small shed built and attached to the northeast corner in 1977. The building was vacated in 1986 and demolished in 1989.
- Building 9A: This building was used as an extension of the cafeteria. It was vacated in 1986 and demolished in 1989.
- Building 10: This small building was used as quality lab. It was vacated in 1986 and was demolished in 1988.
- Building 11: This was a small storage shed which was demolished in 1989.
- Building 12: The southern end of Building 12 was built in 1943 while the northern end was built sometime between 1951 and 1955. The buildings were used as engineering and R&D offices, labor analysis, industrial engineering, accounting and for light residential thermostat assembly. They were vacated in 1986.
- Building 13: This building was used for oil (coolant) storage. It was vacated in 1986 and demolished in 1988. This area included a narrow shed that was located east of Building #12, next to the fence along side the rail road tracks. The northern end of the shed was also used for maintenance storage, the southern end was used for staging storage. These sheds were demolished along with the building in 1988.
- Building 14: This building is currently used by Aerospace Controls as a shipping and receiving area. The building was traditionally used as a warehouse. Raw bulk metals stock is also stored in the building.

- Building 15: This building currently houses the Aerospace Controls mail room, as well as the print shop and credit union.
- Building 16: This building currently houses the Aerospace Controls administrative and assembly areas for Aerospace Controls. It is a two story building, the top floor having been vacated in the late 1970's due to structural concerns. General assembly was previously done on the second floor. The eastern side of the bottom floor is now used for assembly, final inspection, ID inspection, a small painting operation, engineering and the Harper fastener distribution center. The western side of the building houses all administrative offices. It was built in 1967 and is the only structure thought to be built after ITT purchased General Controls in 1963.

SECTION 3

PHYSICAL SETTING

3.1 REGIONAL SETTING

3.1.1 Physiography

The ITT facility is located in the eastern portion of the San Fernando Valley, a roughly elliptically shaped alluvial-filled valley in Southern California (Figure 3-1). Much of the valley fill consists of coalescing alluvial fans originating from the canyons of the bordering mountains. The valley is surrounded on the east and northeast by the San Rafael Hills, Verdugo Mountains, and San Gabriel Mountains; on the north by the San Gabriel Mountains and the eroded south limb of the Little Tujunga Syncline which separates it from the Sylmar Basin; on the northwest and west by the Santa Susana Mountains and Simi Hills; and on the south by the Santa Monica Mountains (California State Water Rights Board, 1962).

The Los Angeles River is the primary surface drainage through the San Fernando Valley. It flows along the southern side of the valley toward the southeast through the Los Angeles Narrows. The principal tributaries feeding into the drainage network are the streams and washes of the Big Tujunga, Little Tujunga, Pacoima, Aliso, Browns, Bull, and Arroyo Calabasas Canyons (California State Water Rights Board, 1962). Many of these drainages are improved and are part of the County and City of Los Angeles Flood Control Projects.

3.1.2 Regional Geology

The San Fernando Valley comprises a portion of the northwestern block of the Los Angeles Basin. The basin lies on the southern boundary of the Transverse Range geologic province, which is characterized by east-west trending geological structures.

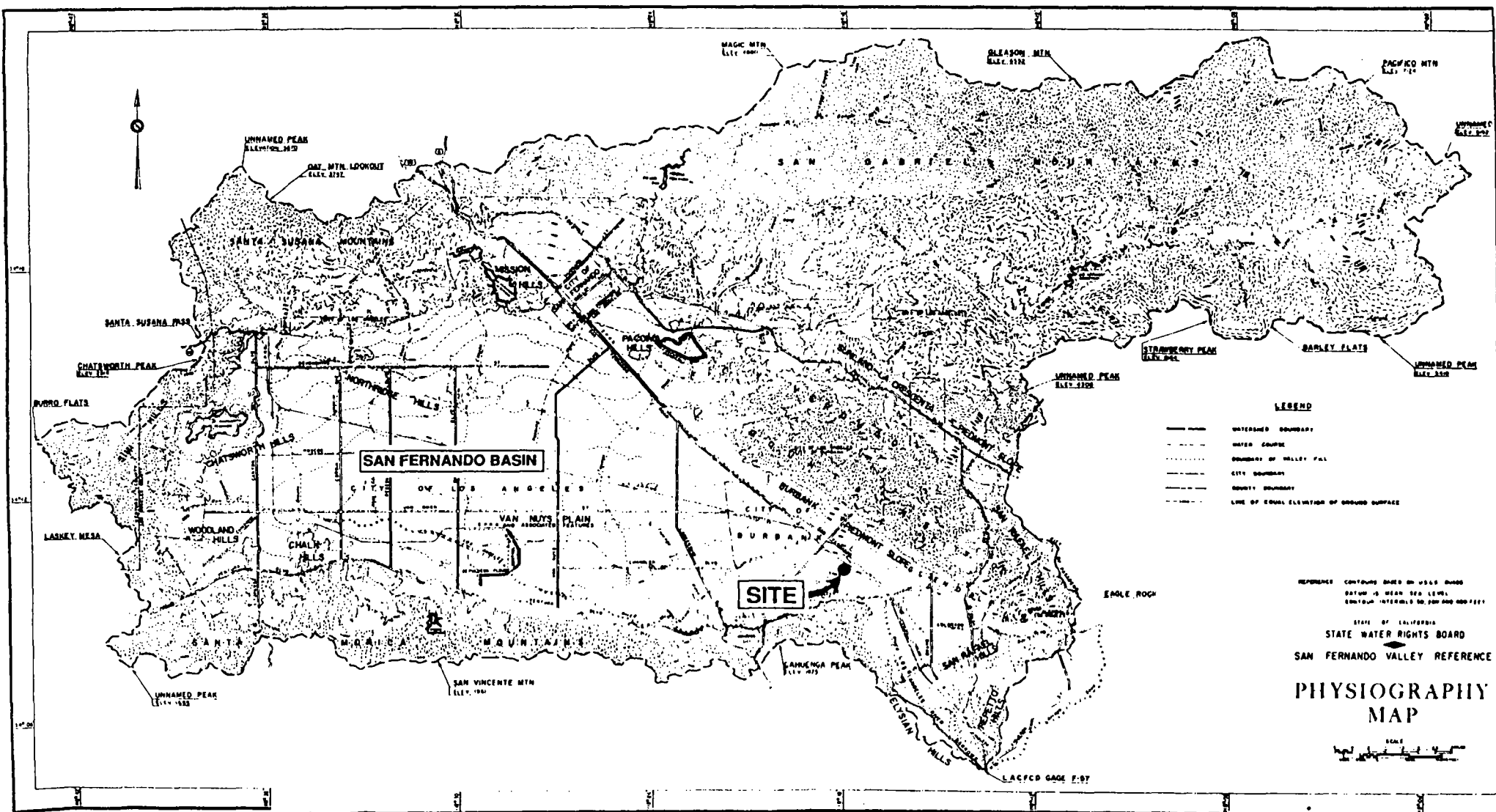


FIGURE 3-1 LOCATION OF ITT SITE AND PHYSIOGRAPHY OF THE AREA (from CALIFORNIA STATE WATER RIGHTS BOARD, 1962).

Structurally, the San Fernando Valley is a large east-west synclinal downwarp. The valley is bounded on the north and northeast by the crystalline-rock, fault-block masses of the San Gabriel Mountains and Verdugo Mountains (Sharp, 1972). To the south lie the anticlinally upwarped Santa Monica Mountains which consist largely of late-middle to early Tertiary, marine sedimentary rocks: Triassic slates and granite rocks are to the east and mid-Tertiary volcanic rocks are to the west (Sharp, 1972). The San Fernando Valley basement rock complex is overlain by thousands of feet of mid-Tertiary marine sediments and volcanics that were deposited during a major tectonic reorganization of western California during the Neogene (Blake et al., 1978).

Plio-Pleistocene tectonic reorganization and flexing of the California Borderland (the offshore geologic province south of the Transverse Range Province) increased subsidence rates. This increased subsidence deepened the major synclinal areas of Los Angeles basins and uplifted the Santa Monica and San Gabriel Mountains, greatly enlarging the source terrain for subsequent valley deposits (Yerkes, et al., 1965; Ingle, 1980). As a result, clastic continental deposition began to dominate in the Pleistocene, rapidly filling the synclinal areas in Los Angeles Basin (Yerkes et al., 1965).

More recently, alluvial deposition dominated in the late Pleistocene and has continued into the Holocene. The alluvial deposits of the western portion of the San Fernando Valley contain fine-grained, clayey deposits with minor sands and gravels. This fine-grained material is derived from the Tertiary and pre-Tertiary sedimentary rocks of the Simi Hills, the Santa Monica Mountains, and the Santa Susana Mountains.

The alluvial deposits of the eastern San Fernando Valley, where ITT is located, are comprised of cobbles, gravel, and sand, with silt and clay as minor components. The source areas for this portion of the San Fernando Valley are the granitic and metamorphic rocks of the western San Gabriel Mountains. The alluvium in the eastern portion of the valley was deposited primarily by the Pacoima and the Tujunga Washes. The soils in the immediate vicinity of the site have been designated as "medium infiltration" soils (California State Water Rights board Referee, 1962). However, most of the soils in the eastern

portion of the valley have been designated as "high infiltration" soils. This geographic distribution of high permeability materials in the eastern portion of the basin has important implications when evaluating the hydrogeology and attendant water production from the different portions of the valley as described below.

3.1.3 Regional Hydrogeology

Generally, the water-bearing zones within the San Fernando Valley are found in the three units. They are (from deep to shallow): the Pleistocene Saugus Formation, late Quaternary Older Alluvium (terrace deposits), and the Recent Alluvium (California State Water Rights Board, 1962).

The water-bearing portion of the Saugus Formation is comprised of poorly sorted, loosely consolidated conglomerate and coarse sandstone that were the result of fluvial and alluvial fan deposition. Intermittent layers and lenses of clayey gravel are present due to in-place weathering of the original materials. Generally, the Saugus Formation has lower permeability than the alluvial deposits (California State Water Rights Board, 1962). The Saugus Formation is restricted to the northern portion of the basin.

The Older Alluvium (terrace deposits) and the Recent Alluvium consist of similar material to the Saugus Formation, but vary areally depending on the source terrain. The sediments are generally very poorly sorted, angular to subangular, and poorly consolidated. Additionally, the Older Alluvium contains cemented deposits locally and areas of residual clays that are the result of weathering.

Numerous layers of ancient soil horizons are found within the Older Alluvium, which indicate depositional hiatus and periods of extensive weathering. Depositional patterns of the Older Alluvium indicate a similar drainage pattern to the existing drainage in the basin. However, stream valleys were probably broader and had slightly lower gradients, which resulted in finer-grained deposits than the Recent Alluvium, which are coarser due to greater stream gradients and uplifted source terrains.

As previously stated, the character of the alluvial material in the San Fernando Basin is dependent on the source terrain. The eastern part of the basin is comprised of detritus from the crystalline rocks that resulted in the very thick accumulations of boulders, gravels, and sands that become finer grained as the distance increases from the canyon mouths. In contrast to well logs in the western portion, the eastern portion well logs exhibit more permeable materials and have an average of 20% clay, 35% sand, and 45% gravel (California State Water Rights Board, 1962).

The deposits within the western portion of the valley have been derived from predominantly sedimentary rocks and are finer-grained than eastern valley sediments. Well logs from this area indicate an average of 75% clay, 5% sand, and 20% gravel (California State Water Rights Board, 1962). These deposits in the western portion of the Basin generally produce significantly less water of poorer quality than those sediments in the eastern portion of the basin.

As a result, the textural differences of these water-bearing materials have greatly affected the distribution of groundwater in the basin. The coarse sands and gravels of the eastern part of the San Fernando Valley constitute approximately one-third of the surface area of the groundwater reservoir; however, the same area holds approximately two-thirds of the groundwater storage capacity. Due to the very permeable character of these deposits, the majority of the City of Los Angeles wells are located in this region (California State Water Rights Board, 1962).

The ITT site is underlain by sands, gravels, silts, and clays, with sands predominating within the stratigraphic column. Based on regional data, the general direction of groundwater flow is southeast towards pumping depressions created by Crystal Springs and the City of Glendale well fields, and towards the Los Angeles River Narrows at the east end of the Santa Monica Mountains.

3.2 SITE GEOLOGY AND HYDROGEOLOGY

A review of the available lithologic data indicates a complex and heterogenous vadose zone typical of alluvial depositional environments (WESTON, 1989).

Alluvial depositional environments are characterized by sands and gravels deposited in channels that are elongated in the direction of stream flow and are commonly enclosed in finer-grained silts and clays (overbank deposits). Alluvial sediments also are characterized by significant lateral lithologic discontinuities, which appear to be prevalent at the ITT site.

In general, the vadose zone appears to be comprised of an upper fine-grained unit (silt and clay) approximately 10 feet thick, overlying a sand unit occurring to a depth of approximately 40 to 50 feet below ground surface (BGS). Lithologies interfinger laterally and both units can contain grain sizes ranging from clay to gravel.

Few soil borings installed by A.L.B encountered groundwater, so interpretation of the site hydrogeology is limited at this time. However, saturated conditions were encountered in a few borings ranging in depth from 38 to 50 feet. Water was encountered at 38 feet BGS in Boring 2, along the Southern Pacific Railroad Mainline north of the site. In the vicinity of Building 2, water was encountered at 50 feet BGS in Boring 11, at 45 feet BGS in Boring 12, and at 47 feet BGS in boring 30. No water was encountered in borings drilled by Harding Lawson Associates (HLA) to depths of 45 to 50 feet in the vicinity of Building 16. Water was encountered at 38 feet BGS in Boring 1 drilled by Leroy Crandall and Associates (LCA) in the vicinity of Building 6. Because water is encountered in some borings, but is not encountered in adjacent borings, this water may be perched and of limited areal extent.

A water well is located in Building 2. Prior to the late 1950s, the water from this well was used for wash water outside of Building 2. As records are not available, the total depth of the well is unknown, and the well presently appears to be silted up to a depth of

approximately 31 feet below ground surface. Site personnel recollect that, in the past, the depth to water was approximately 80 feet below ground surface (D. Gibson, ITT, personal communication).

Additional information on local hydrogeology is available in reports submitted to the RWQCB by Interstate Brands Corporation (IBC), 6841 San Fernando Road, Glendale, California. Interstate Brands is located to the northeast of the ITT facility, just across the Southern Pacific Railroad Mainline. Monitoring wells were installed at IBC as part of Phases II and III of a Site Assessment. The assessment is being conducted in order to investigate historic releases of diesel fuel and motor oil. One monitoring well, MW-10, in which free diesel product thickness was measured as 0.16 feet, is located directly adjacent to the ITT site, south of the Southern Pacific Railroad Mainline. Four of the six wells at the IBC site encountered appreciable quantities of free product (0.84' to 10.28').

Geologic conditions at the IBC site are similar to those encountered at the ITT site. Groundwater is encountered at approximately 50 feet below ground surface on the IBC site, with a westerly groundwater gradient of 0.012 ft/ft. However, chemical concentrations indicate flow is or has historically been opposite to the present apparent flow direction. The groundwater gradient in this area is believed to be affected by pumping of municipal wells at the Headworks and City of Glendale (Grandview), and the Crystal Springs well fields. The Headworks wells are located approximately 1.25 miles southwest of the ITT site. The Grandview wells and the Crystal Springs wells are located approximately 1.25 miles and 1.6 miles southeast of the ITT site, respectively.

3.3 OFF-SITE GROUNDWATER WELL SURVEY

A preliminary survey of existing groundwater wells within a 3-mile radius has been completed for the Burbank Site. Data for this preliminary survey were collected from the Los Angeles County Department of Public Works, Hydrology Division (LAPWHD). Additional data are currently being gathered from the following agencies:

- California Department of Water Resources.
- Los Angeles Regional Water Quality Control Board.
- California Department of Health Services.
- Los Angeles Department of Water and Power (LADWP), Upper Los Angeles River Area (ULARA) Watermaster.

Table 3-1 summarizes the groundwater wells identified at this time which are located within a 3.5 mile radius of the site. Within this radius, 42 wells have been identified, 12 wells are located within one mile of the site (Figure 3-2). The majority of the wells are municipal supply or observation wells. Availability of well logs and well use are also noted, however, due to confidentiality and incomplete records, some wells have no log and/or use records (Table 3-1).

Depth to first groundwater within the survey area ranges from 11.6 feet to 204.0 feet below grade, with a depth to groundwater of 62.5 feet below grade at the well identified in the LAPWHD records which is nearest the site (0.45 miles from site). Groundwater surface elevation ranges from 336.0 feet to 506.9 feet above sea level, with an elevation of 426.1 feet at the well nearest the site. The approximate regional hydraulic gradient was calculated using data from three groundwater wells identified in the LAPWHD records that encircled the site property. These three wells are all located within 1.25 miles of the site. Groundwater flow direction at the site area is to the southeast with an approximate gradient of 36.8 ft/mile.

3.4 SURFACE WATER

The Burbank western channel is located upgradient from the site facility. This improved storm channel joins with the Los Angeles River, south of the site at Griffith Park. Approximately 1.5 miles downgradient from the site, the Los Angeles River is joined by

the Verdugo Wash, at the northeastern edge of Griffith Park. At approximately 2.5 miles and 3.5 miles downgradient, two improved channels divert the numerous ephemeral streams of Griffith Park into the Los Angeles River. The Los Angeles River then heads nearly due south into downtown Los Angeles.

Located approximately 1.25 miles southwest of the site is the Headworks Spreading Grounds, which holds water during severe storm conditions. Since 1982, the Headworks Spreading Ground has not been in use due to water quality concerns by the State Department of Health Services (ULARA, 1989).

3.4.1 Groundwater Recharge

Hansen Dam and Pacoima Dam are currently used in a groundwater recharge program. Hansen and Pacoima Dams are both upgradient from the site, located approximately 6.5 miles and 13.5 miles, respectively, to the northwest. Variation in seasonal precipitation can result in inconsistent recharge values to the groundwater. Urban development in the ULARA in recent years has led to the reassignment of Pacoima and Hansen Dams. Originally built for flood protection, they now serve to regulate groundwater recharge and, in recent times of insufficient rainfall seasons, to make optimum use of what precipitation can be collected (ULARA, 1989).

3.5 CLIMATE

The interior basins of Southern California have a Mediterranean climate characterized by warm dry summers and mild winters. This climate is created by Southern California's location on the southeastern edge of the Pacific High Pressure Area. During the summer months, the dominant climatic feature is the Pacific High, a high pressure cell which results in air being heated by compression. This condition creates a temperature inversion layer of about 2,000 feet above sea level (LADPW, 1989).

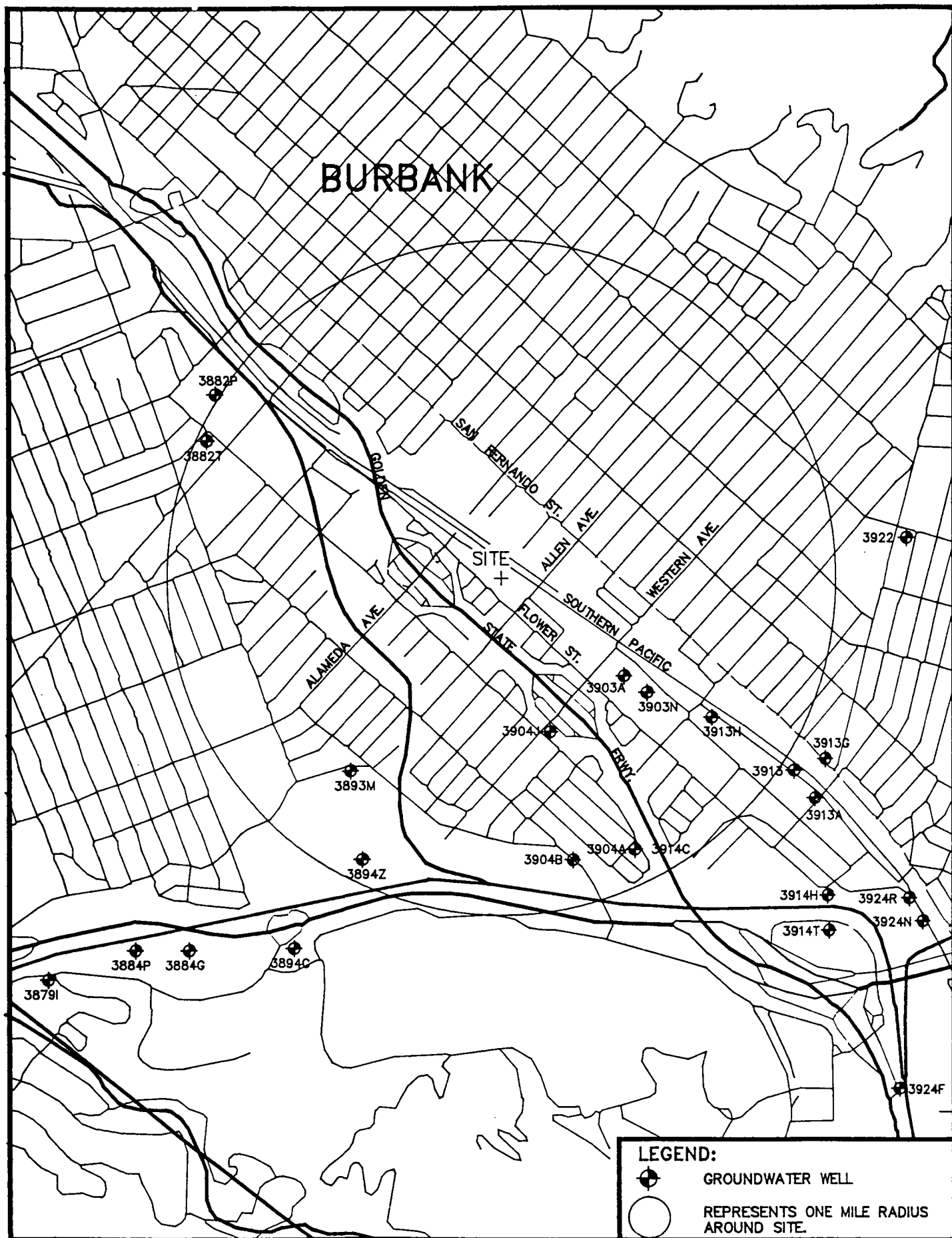


FIGURE 3-2: LOCATIONS OF GROUNDWATER WELLS NEAR ITT SITE

Table 3-1

Preliminary Off-site Well Survey
ITT Facility
Burbank, California

L.A. County Well #	California State Well #	Distance From Site (miles)	Date of Reading	Well Elevation (ft)	Water Surface Elevation (ft)	Depth to Water Surface (ft)	Well Use	Log Information
3903A	1N14W13R01	0.45	10/31/89	488.6	426.1	62.5	MUN. SUPPLY	ON FILE
3904J	1N14W24H032585	0.50	3/31/88	462.0	437.6	24.4	MUN. SUPPLY	ON FILE
3903N	1N14W13B02	0.54	9/30/88	483.8	429.1	54.7	MUN. SUPPLY	N/A
3893M	1N14W24D05	0.78	10/18/89	480.3	438.9	41.4	MUN. SUPPLY	ON FILE
3913H	1N13W18N01	0.78	10/31/89	477.6	427.5	50.1	MUN. SUPPLY	N/A
3903M	1N13W19D03	0.83	10/31/89	472.6	430.4	42.2	MUN. SUPPLY	N/A
3904B	1N14W24H0N	0.88	10/31/89	464.0	433.2	30.8	IRRIGATION capped	N/A
3904A	1N14W24H01258441	0.92	10/25/89	461.0	429.0	32.0	NOT USED	N/A
3914C	1N13W19E01	0.94	10/31/89	468.2	431.2	37.0	MUN. SUPPLY	ON FILE
3894Z	1N14W34E07	0.96	10/25/89	476.7	437.2	39.5	MUN. SUPPLY	N/A
3882P	1N14W11Q01	1.00	11/17/85	555.3	486.1	69.2	MUN. SUPPLY	N/A
3882T	1N14W14B08	1.00	11/17/85	557.7	488.1	69.6	MUN. SUPPLY	ON FILE
3913G	1N13W19B07	1.08	10/31/89	470.6	425.9	44.7	MUN. SUPPLY	N/A
3913A	1N13W19C014W	1.08	10/31/89	471.0	420.8	50.2	MUN. SUPPLY	ON FILE
3913	1N13W19B014W	1.08	1/30/89	470.0	425.3	44.7	MUN. SUPPLY	ON FILE
3914R	1N13W19B06	1.12	10/30/87	465.0	---	---	MUN. SUPPLY	N/A
3922	1N13W18H01	1.25	10/18/89	613.1	452.6	160.5	G.W. OBS	ON FILE
3894C	1N14W23J05	1.27	10/20/89	503.0	439.8	63.2	G.W. OBS capped	N/A
3872H	1N14W14F05256814	1.29	12/11/89	546.5	475.8	70.7	G.W. OBS	N/A
3914H	1N13W19G012591	1.38	10/25/89	438.0	426.4	11.6	MUN. SUPPLY	N/A

Table 3-1 (continued)

Preliminary Off-site Well Survey
ITT Facility
Burbank, California

L.A. County Well #	California State Well #	Distance From Site (miles)	Date of Reading	Well Elevation (ft)	Water Surface Elevation (ft)	Depth to Water Surface (ft)	Well Use	Log Information
3914T	1N13W19K03259441	1.42	10/18/89	440.4	417.5	22.9	Capped 7/1/60	ON FILE
3884G	1N14W23J03	1.50	10/20/89	496.0	442.5	53.5	N/A	N/A
3924R	1N13W19J04	1.58	10/31/89	466.3	410.0	56.3	IND. SUPPLY	N/A
3884P	1N14W23L012572	1.62	8/17/86	487.6	387.6	100.0	MUN. SUPPLY	ON FILE
3924N	1N13W19J01	1.71	10/31/89	465.0	422.1	42.9	IND. SUPPLY	N/A
3874I	N14W23M0225694	1.82	10/20/89	512.0	443.9	68.1	IRRIGATION	ON FILE
3924F	1N13W19Q0225974	1.90	10/18/89	439.1	425.0	14.1	Capped 11/23/59	N/A
3863B	1N14W15P02256541	2.15	10/25/89	453.4	100.5	N/A	N/A	N/A
3934C	1N13W20F02	2.15	4/6/78	517.0	352.3	164.7	IND. SUPPLY	N/A
3934B	1N13W20K02260541	2.31	10/18/89	519.3	425.9	93.4	G.W. OBS	ON FILE
3944	1N13W20H01	2.38	10/18/89	542.0	425.4	116.6	IND. SUPPLY capped 11/12/63	ON FILE
3945	1N13W20R01261141	2.83	4/6/78	540.0	336.0	204.0	IND. SUPPLY	ON FILE
3851J	1N14W09H04	2.83	11/17/85	637.9	500.1	137.8	MUN. SUPPLY	N/A
3851C	1N14W09H01	2.88	11/17/85	646.3	501.9	144.4	MUN. SUPPLY	ON FILE
3851K	1N14W09K02	2.96	11/17/85	631.0	497.5	133.5	MUN. SUPPLY	N/A
3851E	1N14W09G02	3.03	11/17/85	643.0	500.5	142.5	MUN. SUPPLY	ON FILE
3851B	1N14W09G03	3.11	11/15/82	654.9	506.9	148.0	MUN. SUPPLY abandoned 12/17/82	ON FILE
3850K	1N14W09A03	3.11	11/15/81	661.0	491.8	169.2	MUN. SUPPLY	N/A

Table 3-1 (continued)

Preliminary Off-site Well Survey
ITT Facility
Burbank, California

L.A. County Well #	California State Well #	Distance From Site (miles)	Date of Reading	Well Elevation (ft)	Water Surface Elevation (ft)	Depth to Water Surface (ft)	Well Use	Log Information
3841F	1N14W09B04	3.5	11/17/85	662.2	502.6	159.6	MUN. SUPPLY	ON FILE
3841G	1N14W09L042549	3.5	11/17/85	650.5	500.6	149.9	MUN. SUPPLY	ON FILE
3841J	1N14W09Q01	3.5	11/17/85	637.1	498.5	138.6	MUN. SUPPLY	ON FILE
3845F	1N14W28B012552	4.25	3/30/78	544.3	---	--	N/A	N/A

Source: Los Angeles County Department of Public Works, Hydrology Division

In the ULARA, mean seasonal precipitation ranges from about 14 inches at the western end of the San Fernando Valley to 35 inches in the San Gabriel Mountains (ULARA, 1989). Approximately 80% of the rainfall occurs from December to March. The 100-year average precipitation for the valley and mountains is 16.48 inches and 21.91 inches, respectively. The recent consecutive dry seasons have produced seasonal rainfalls considerably lower than these averages.

3.6 FLORA/FAUNA

In the immediate area of the subject property, most ground surfaces are covered with asphalt, concrete, or structures. Limited areas of grass border Building 1 along Allen Avenue.

3.7 ZONING

The subject area is located in a commercial and industrial area parallel to the Golden State Freeway. Residential areas are present approximately 0.75 miles north and northwest of the site. Additional zoning information will be obtained from The City of Burbank, Zoning Department and The City of Glendale, Zoning Administration Department. Public and medical facilities are summarized in Table 3-2.

An investigation to identify potential hazardous waste sites in the area surrounding the subject property is currently being performed. This investigation will use the U.S. Environmental Protection Agency CERCLIS list and The Los Angeles Department of Health Services, Public Investigations Department to identify potential sites within a 3-mile radius of the subject property.

TABLE 3-2

PUBLIC AND MEDICAL FACILITIES

Within 1 Mile of the Site	Direction from Site
Schools:	
Miller School	Northwest
Franklin School	South
Jefferson School	East
McKinley School	Southwest
Jordan Jr. High School	Southwest
Memorial Parks:	
Grandview Memorial Park	East
Parks:	
Pickwick Recreation Park	Southwest
Griffith Manor Park	Southeast
Griffith Park	South
Hospital:	
Burbank Community Hospital	North
Within 3 Miles of the Site	Direction from Site
Schools:	
Jefferson School	Northwest
Muir Jr. High School	Northwest
Emerson School	Northwest
Methodist School	Northwest
Burbank High School	Northwest
Bellarmino	Northwest
Bellarmino-Jefferson High School	Northwest
Within 3 Miles of the Site	Direction from Site

TABLE 3-2 (continued)
PUBLIC AND MEDICAL FACILITIES

Within 3 Miles of the Site	Direction from Site
Schools (continued):	
Balboa School	Northeast
Hoover High School	East
Keppell SchoolEast	East
Toll Jr. High SchoolEast	East
McCarthy SchoolEast	East
Central SchoolWest	West
Burroughs High SchoolWest	West
Lincoln SchoolSouthwest	Southwest
St. Finbar School	Southwest
Providence High School	Southwest
Memorial Parks:	
Forest Lawn Memorial Park	Southwest
Mount Sinai Memorial Park	Southwest
Parks:	
	East
Pelanconi Park	Northwest
McCambridge Park	Southwest
Buena Vista Park	Southwest
Mountain View Park	Northwest
Olive Avenue Park	
Hospitals:	
St. Joseph's Medical Center	Southwest

SECTION 4

SUMMARY OF PREVIOUS INVESTIGATIONS

4.1 PREVIOUS WORK PERFORMED

Previous investigations of the site were performed by Harding Lawson Associates (HLA), A.L. Burke Engineers (ALB) and Roy F. Weston, Inc. (WESTON). Additional subsurface information is available from a foundation engineering study conducted by Leroy Crandall and Associates (LCA).

4.1.2 Previous Work Performed by Harding Lawson Associates

Harding Lawson Associates (HLA) performed a site investigation in 1986 following the removal of a concrete sump, a titanium tank, and a steel tank in the vicinity of Building 16 (HLA, 1986). Petroleum hydrocarbons and VOCs were detected in the soil samples taken from the base of the excavations. As a result, three borings were conducted in the area of the excavations to depths of 45 to 50 feet. Soil samples collected from the borings revealed that compounds once stored in the tanks were not present in the underlying soils.

4.1.3 Previous Work Performed by Leroy Crandall and Associates

Leroy Crandall and Associates (LCA) performed a preliminary foundation investigation for the proposed construction at the site of Buildings 1, 2, and 3 (LCA, 1988). This work was performed in May 1988, and consisted of standard geotechnical tests. Three borings were drilled to a depth of 40 feet below ground surface using 20-inch diameter bucket-type drilling equipment. Saturated conditions were encountered in one of the borings at a depth of 38 feet below ground surface. This boring was located at the southern corner of Building 6.

4.1.4 Previous Work Performed by A.L. Burke Engineers

A.L. Burke Engineers, Inc. (ALB) was contracted by ITT General Controls Division in 1987 to undertake site assessment of areas slated for demolition in order to prepare for new planned construction (ALB, 1988-1989).

4.1.4.1 Building 8 Area

Initial work completed on the site by ALB was the characterization of Building 8 in order to begin demolition. Several sampling phases were conducted which collected bulk, wipe and core samples throughout Building 8 during 1987 and 1988. Analytical data indicated PCB residue throughout the building. Building 8 was dismantled and the foundation demolished from November 1988 to May 1989. Building and flooring material which contained PCB residues were segregated and disposed of in the licensed TSCA facility in Beatty, Nevada owned by U.S. Ecology.

During the removal of the subfloor in the machining area of Building 8 evidence of discoloration of the soils was found. Subsequent sampling indicated the presence of PCBs in the soils. Shallow soil borings were sampled in the area to design the remediation program. An area of approximately 156 feet by 98 feet was excavated to a depth of 5 feet on the north side and 8 feet on the south and then backfilled. Confirmation sampling indicated the presence of PCB above 50 mg/kg in the backfilled area. Closure of the area was not completed by ALB.

4.1.4.2 Building 5 Area

In November 1987, A.L. Burke Engineers initiated a program to complete the closure of a sump outside Building 5 in order for ITT General Controls to build a concrete platform for a new compressor. The sump was used to hold cooling water for previous operations. The cooling water was sampled and analyzed for VOCs, PCBs, and TPH. Sludge from the bottom of the sump was sampled and analyzed for TPH. In addition, a

soil boring was conducted and samples were retrieved from beneath the sump. Analytical results indicated no significant contamination existed in either the cooling water, sludge, or soil samples. The sump was inspected for closure by a representative of the County Department of Public Works, Waste Management Division, in March 1988. The inspector granted approval to proceed with the closure.

4.1.4.3 Site Wide Program

In May 1988 ITT General Controls requested ALB to conduct an assessment of the entire Burbank-Glendale site. ALB initiated a site wide soil boring investigation to assess the ITT facility. The program included twelve borings near Buildings 2, 4, 7, 10, and 16. All soil sample results were non-detect for VOCs (EPA 8010) and TPH (EPA 418.1). Analyses performed for CAM metals revealed no significant metals concentrations.

4.1.4.4 Buildings 2 and 3 Area

Investigations were begun in May 1988 to assess Buildings 2 and 3. The purposes of the investigations were to 1) identify areas of Buildings 2 and 3 where compounds associated with the operations at the plant could be present, 2) assess the areal and vertical extent of the compounds, and 3) locate sumps and/or tanks used in those buildings.

Numerous soil samples were collected during the investigations of Buildings 2 and 3 (Figures 4-1, 4-2). Approximately 137 chemical analyses were performed for the work conducted in Building 2. The majority of these samples were collected at various depths from soil borings. For the work at Building 3, approximately 188 chemical analyses were performed *predominantly from the northeastern portion of the building*. The samples consisted of surficial soil samples, soil samples from soil borings, sludge samples, oil samples, and concrete core samples. The majority of the soil borings were completed in both buildings were to a depth of 20 feet; two borings, 11 and 12, were completed to a depth of 50 feet.

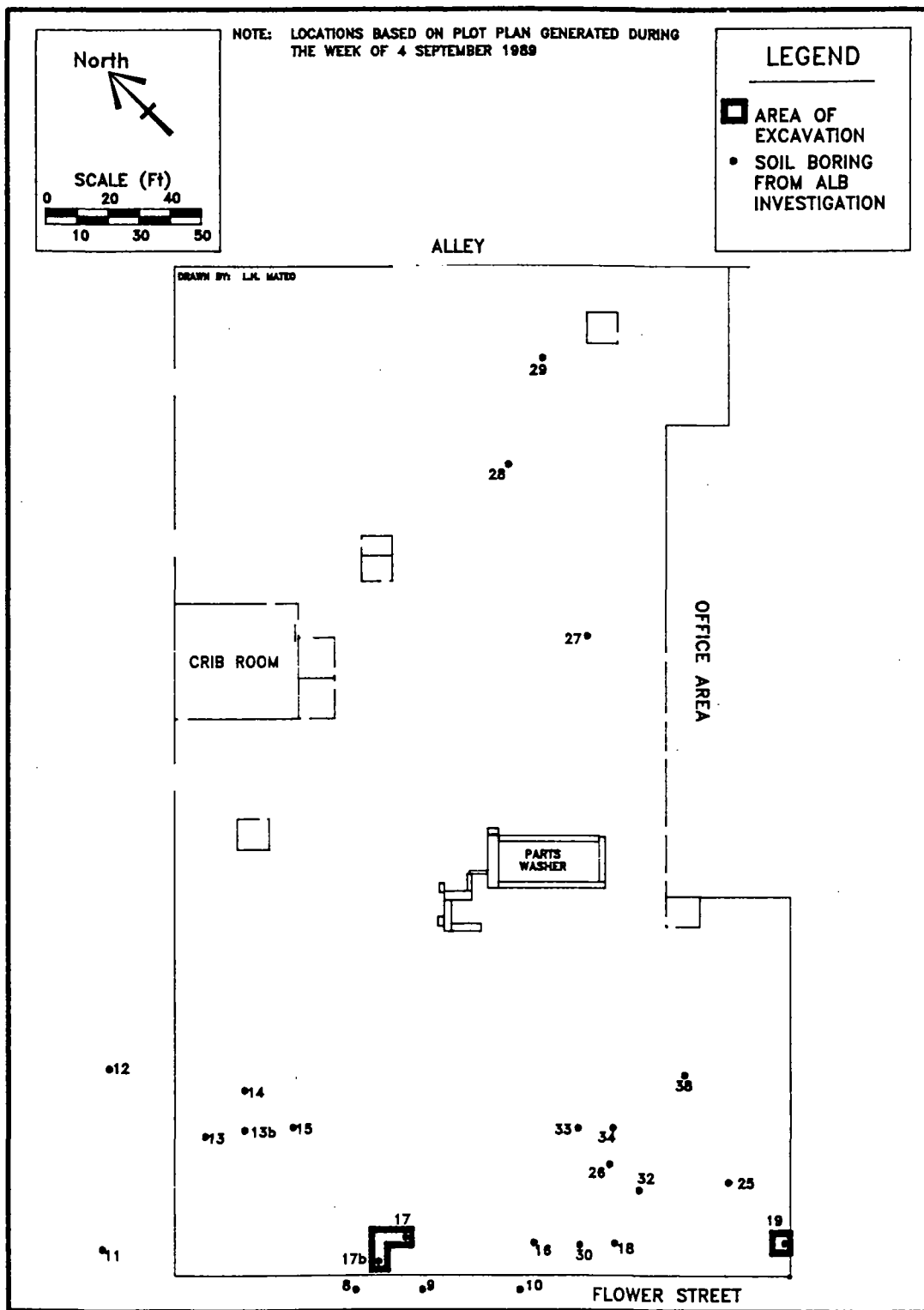


FIGURE 4-1: LOCATIONS OF PREVIOUS SOIL BORINGS IN BUILDING 2

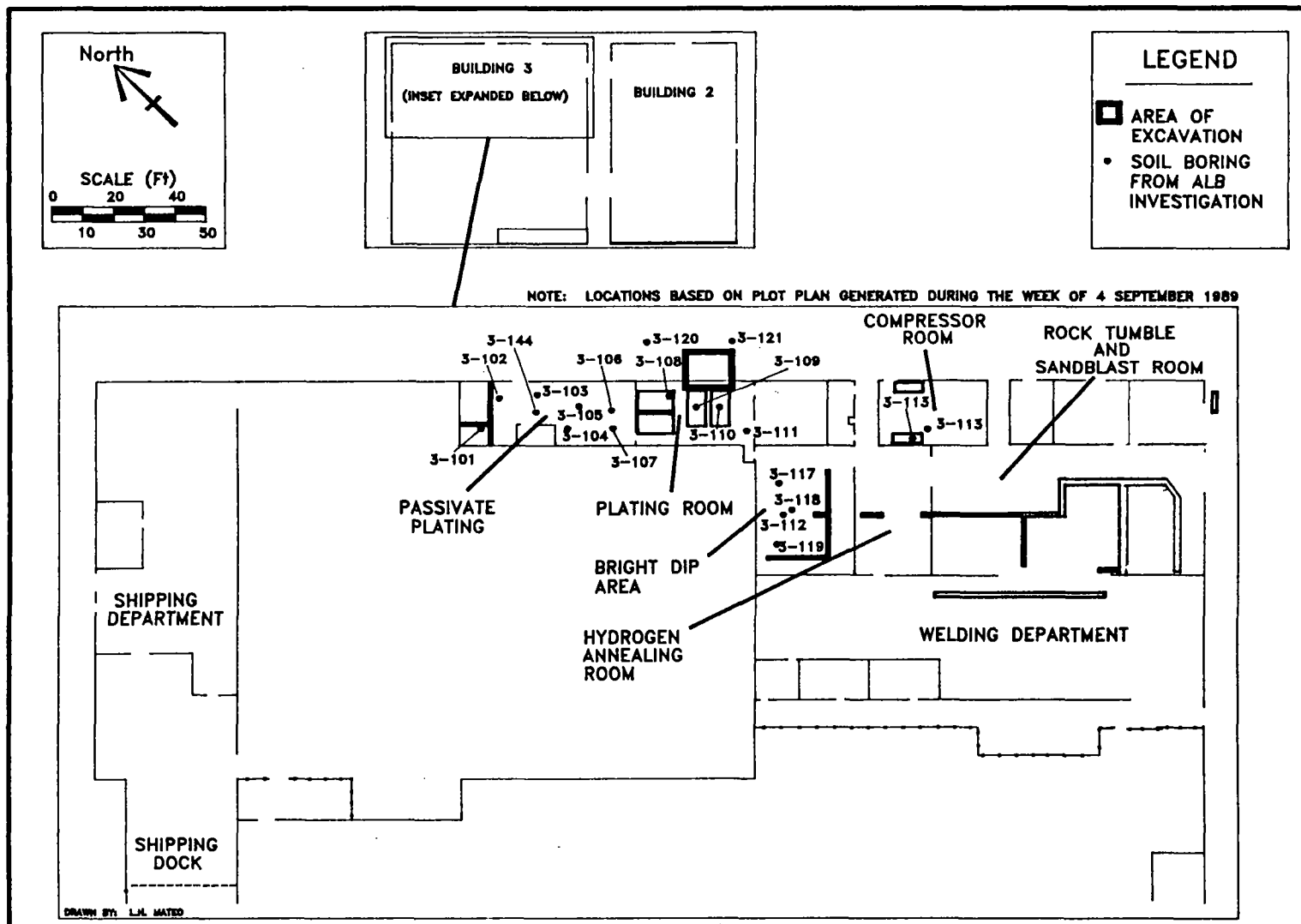


FIGURE 4-2: LOCATIONS OF PREVIOUS SOIL BORINGS IN BUILDING 3

Sometime in 1988, ALB excavated an area near Building 3 adjacent to four sumps located in the Plating Room. This excavation was initiated due to water leaking into one of the sumps. The source of the water seepage was discovered to be a leaking sewer line. However, during the excavation the subsurface soil was found to be discolored. Samples of the excavated soil indicated high concentrations of both metals and VOCs. As a result, two borings were conducted northeast of the excavation, Borings 3-120 and 3-121. The soil samples were analyzed for CAM metals only, and results revealed no significant metals contamination.

Analytical results from these investigations indicate three primary areas for follow-up work in the two buildings: 1) the Bright Dip sump in Building 3, 2) the plating area located on the northeast side of Building 3, and 3) the southern corner of Building 2 which yielded high VOCs concentration from soils at 30 feet of depth.

4.1.5 Previous Work Performed by Roy F. Weston, Inc. (WESTON)

In September 1989, WESTON was contracted by ITT Aerospace to evaluate previous work completed by ALB and recommend an action plan in order to complete the demolition of Buildings 1, 2 and 3. The summary of the ALB work and recommended action was presented in the Site Characterization Report and Action Plan for ITT Facility Burbank, California (WESTON, 1989). This report includes a QA/QC Plan for the site and a Sampling and Analysis Plan. The Health and Safety Plan is presently being updated for this work plan.

4.1.5.1 Soil-Gas Survey

The first recommended action for the site was a soil-gas survey investigation which was completed by WESTON in January 1990 to identify areas of elevated VOC concentrations which may not have been discovered in previous investigations. The soil-gas survey consisted of 133 samples taken from 125 locations. Samples were analyzed utilizing EPA Method 624 for VOCs. Contour levels based on total concentrations of VOCs identified

in the soil-gas were plotted on a map of the facility. In addition, deep soil-gas samples were obtained at depths of 4, 12 and 24 feet from four locations. Several areas were identified which had not been addressed in previous sampling programs.

4.1.5.2 Residue Sampling of Buildings 1, 2, and 3

In preparation for the demolition of Buildings 1, 2, and 3, an above-ground sampling program was conducted by WESTON in December 1989 and January 1990 (WESTON, 1990a). The purpose of the sampling was to identify areas which may require special handling in the demolition of the buildings. Samples were collected of material which may contain chemical residues and materials suspected of containing asbestos. Building 1 was sampled only for suspect asbestos-containing materials.

Results from sampling of residual material in Buildings 2 and 3 indicate some areas of TPH, PCB, and VOC residues. In Building 2, TPH contamination exists in the overhead areas, floor debris, sumps, and debris piles. Some of these same areas yielded PCBs. VOCs and low levels of cyanide were identified in the parts washer and adjacent trenches and sumps. In Building 3, TPH residue exists mainly in debris on the floor. Materials sampled from the floor trenches in the welding department area yielded concentrations of VOCs.

4.1.5.3 Building 8 Area

A work plan was developed for ITT Aerospace in November 1989 to address the closure of the Building 8 site. This plan was submitted and approved by the CHD. Eight initial borings were sampled in February 1990 as preliminary assessment of the remediation work. The results of the borings indicated PCB concentrations were still present in the area.

The area has been secured and covered for dust control. A supplementary work plan will be completed and submitted to assess the vertical and lateral extent of PCBs in the soil.

4.2 AREAS OF INVESTIGATION IDENTIFIED BY PREVIOUS WORK

Based on the previous soil investigations, residue sampling and the soil-gas survey, six areas are outlined and are addressed in this Work Plan (Figure 4-3). The areas were largely defined by the soil-gas isopleths and, in the case of Area E, on soil boring data and the soil-gas vertical profile. Each area is described below along with the major constituents and the possible sources.

- AREA A - Area A encompasses the central northeastern section of Building 3 which includes the previous Plating Room area and Bright Dip Sump Area (Figure 4-3). The sumps were concrete lined and show evidence of deterioration. The sumps are connected to floor drains which discharged to a collection sump previously located in Building 3. Some soil excavation has been conducted adjacent the plating area at the site of the previous above-ground acid tanks on the northeast side of Area A.

Soil samples collected from borings located in the Plating Room yielded concentrations of PCE of 2.5 and 10 mg/kg in boring 3-109 at a depth of 10 feet, and in boring 3-110 at a depth of 15 feet, respectively. Analytical results from four soil borings located in the Bright Dip area also detected PCE at concentrations of 120 mg/kg in boring 3-118 at a depth of 15 feet, and 30 mg/kg in boring 3-112 at 15 feet.

The soil-gas results supported the previous soils data in Area A which yielded elevated VOC concentrations, of which PCE was the largest component. One soil-gas depth profile was collected at 4, 12, and 24 feet and detected increasing VOC concentrations with depth (WESTON, 1990b).

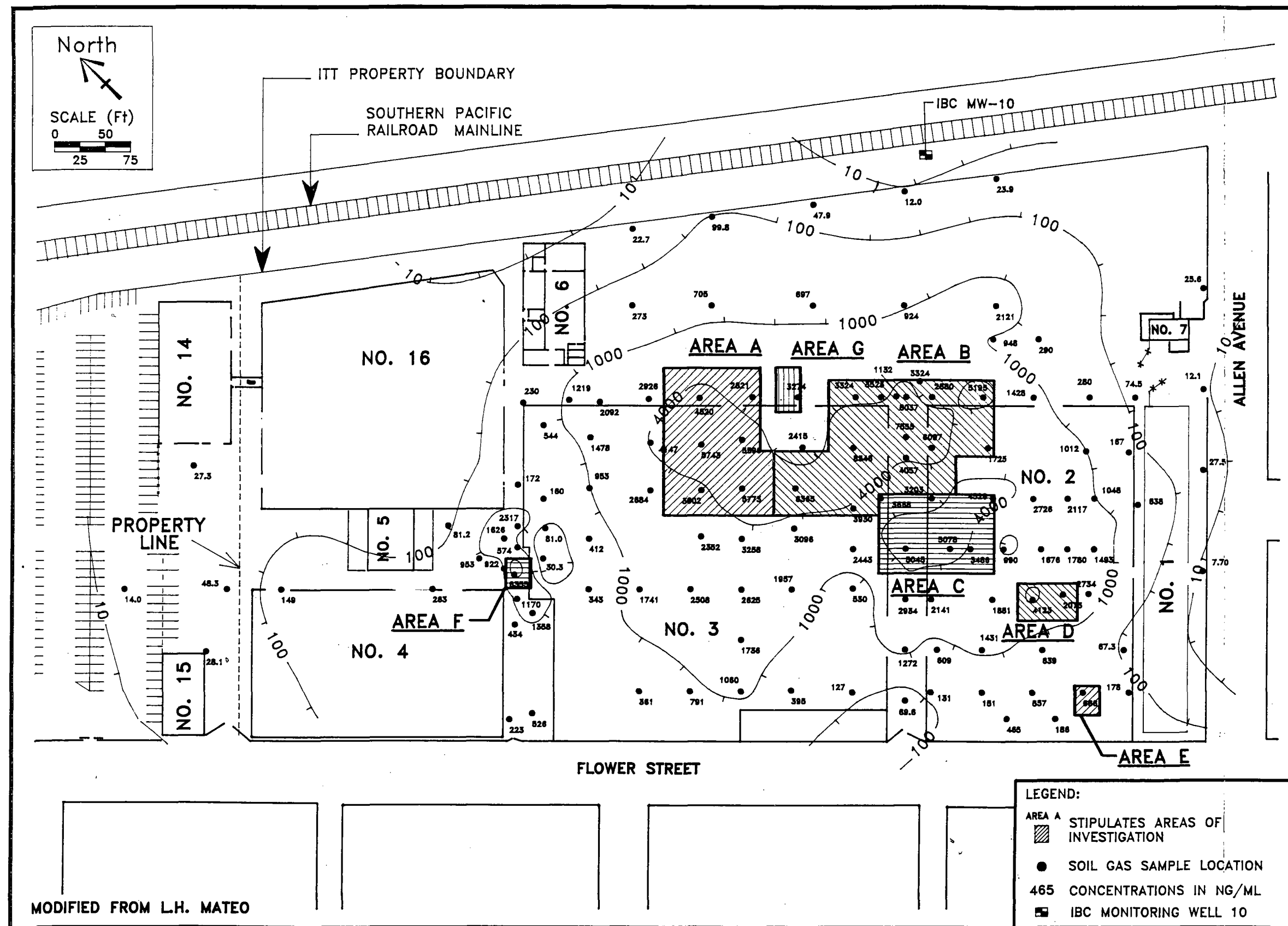


FIGURE 4-3: LOCATIONS OF AREAS OF INVESTIGATION
ITT AEROSPACE CONTROLS – BURBANK, CA.

The only soil samples to date which have yielded metal values above the Total Threshold Limit Concentration (TTLC) were collected in Area A from Boring 3-104. Total chromium was detected above the TTLC value at depths of 0, 5, and 10 feet, yielding 4,600, 3,200, and 3,900 mg/kg, respectively. Hexavalent chromium was detected above its TTLC value at 15 feet only, yielding 675 mg/kg. The TTLC values for total chromium and hexavalent chromium are 2,500 mg/kg and 500 mg/kg, respectively. However, the levels of total chromium and hexavalent chromium decreased significantly at 20 feet to 34 and 17 mg/kg, respectively, well below the TTLC values.

- AREA B - The eastern section of Building 3, northern corner of Building 2 and the northeastern half of the alley between Buildings 2 and 3 is the focus of Area B (Figure 4-3). Elevated soil-gas concentrations were observed in Area B. Concentrations of PCE, TCA, TCE, dichloroethane (DCA), and dichloroethene (DCE) all contribute to the elevated soil-gas levels in this area. One soil-gas depth profile was collected at 4, 12, and 24 feet and detected increasing concentrations of VOCs with depth (WESTON, 1990b).

No obvious sources are apparent in Area B. Surface drains for rainwater are located in the alley and along the northeast side of Buildings 2 and 3. The drains connect to a shallow concrete collection sump located in the alley. The south corner of Building 3 had previously been a waste oil storage area and had contained a sump which has since been closed. Reportedly, a limited quantity of solvents had been use in the rock tumble and sandblast room which also contains a shallow drainage system. A fuel oil tank was located adjacent the southern corner of Building 3, however the tank was removed and no significant residue was found beneath the tank.

In the former welding department area, sampling of residual materials in the floor trenches yielded concentrations of TCE at 0.69 mg/l and ethylbenzene at 0.56 mg/l (WESTON, 1990b).

- AREA C - Area C is the central northwest area of Building 2 which includes a basement area designated the Crib Room, and the adjacent alley area (Figure 4-3). The soil-gas survey results indicate elevated levels of primarily PCE, TCA, and TCE in the Crib Room and the adjacent alley.

The Crib Room reportedly was used to store tools and recently the area was utilized for record storage. A sump was found in the Crib Room with standing liquid. Analytical samples of the sump liquid revealed a trace amount of TPH, however, VOCs and PCBs analyses were run and none were detected. The collection drains describe above are also located in the adjacent alley area.

- AREA D - Area D is the immediate area around the parts washer near the center of Building 2 (Figure 4-3). Soil-gas results yielded elevated levels of PCE and TCE. Samples of the residue in the parts washer, adjacent floor sump and drainage trenches yielded concentrations of TPH which ranged from 170,000 to 360,000 mg/kg (WESTON, 1990a). In addition, two samples indicated concentrations of chlorinated solvents and toluene which ranged from 0.30 mg/l to 25 mg/l.
- AREA E - Area E is the southern quadrant of Building 2 (Figure 4-3). PCE was detected at 36 mg/kg in the soil sample from boring 32 at a depth of 30 feet however, no compounds were detected at depths of 35 and 40 feet. Because of the elevated level of PCE, a soil-gas depth profile was collected in this area at depths of 4, 12, and 24 feet and indicated increasing VOC concentrations in the soil-gas with depth (WESTON, 1990b).

A parts washer which may have utilized solvents was formerly located in this area. To the south of the area adjacent Building 1 was a 500-gallon fuel oil tank.

- AREA F - Area F is located in the driveway between Buildings 3 and 4 (Figure 4-3). Results of the soil-gas survey identified an area of elevated concentrations of PCE, TCA, DCA, and DCE. The elevated soil-gas levels appear anomalous due to the rapid attenuation over a very small area. No distinct source can be identified in the area. A surface drain is located in the driveway area and a rainwater collection sump which has been closed, is located in the adjacent loading dock area.
- AREA G - Area G is located adjacent to the Compressor Room in Building 3 (Figure 4-3). The soil-gas revealed elevated levels of VOCs in the area and due to oil staining in the concrete and sumps, the area will be addressed. Toluene and TCE were detected at concentrations of 1.7 mg/l and 0.25 mg/l, respectively, from residue samples in the compressor pad area.

SECTION 5

SITE INVESTIGATION

The site investigations for the ITT Burbank Site will address both the soils and groundwater. Three tasks will compose this field effort. The first task will be the installation of perimeter monitor wells to address compliance points, the second task will be the investigation of the soils in the suspected source areas and a preliminary screening of the groundwater using the HydroPunch tool, and the third task will be the siting and installation of monitor wells in the source areas. A flow chart outlining the sequence of the field tasks is presented in Figure 5-1.

5.1 SOILS INVESTIGATION OBJECTIVES

The objectives of the soil investigation described in this Work Plan for the ITT Burbank site are: 1) to fill in data gaps identified during the evaluation of previous boring program and in the soil-gas survey, 2) assess the extent of chemical residues at the various sites so that mitigation measures, if needed, can be evaluated and 3) collect data on the soil properties which may effect the mobility of possible contaminants in the vadose zone.

Eleven soil borings will be drilled in the described areas of investigations (Section 4-2). Based on the previous investigations, the additional soil work will focus on VOCs. Appropriate TPH analysis will be included based on previous results and historical activities in each area. As a precautionary measure, PCB analyses will be run on all soil samples from ground surface to a depth of 15 feet to screen each location for PCB residue due to historical use of PCB containing oils in Building 8. The analytical program is described for the source area borings is described in Section 5.3.2.1.

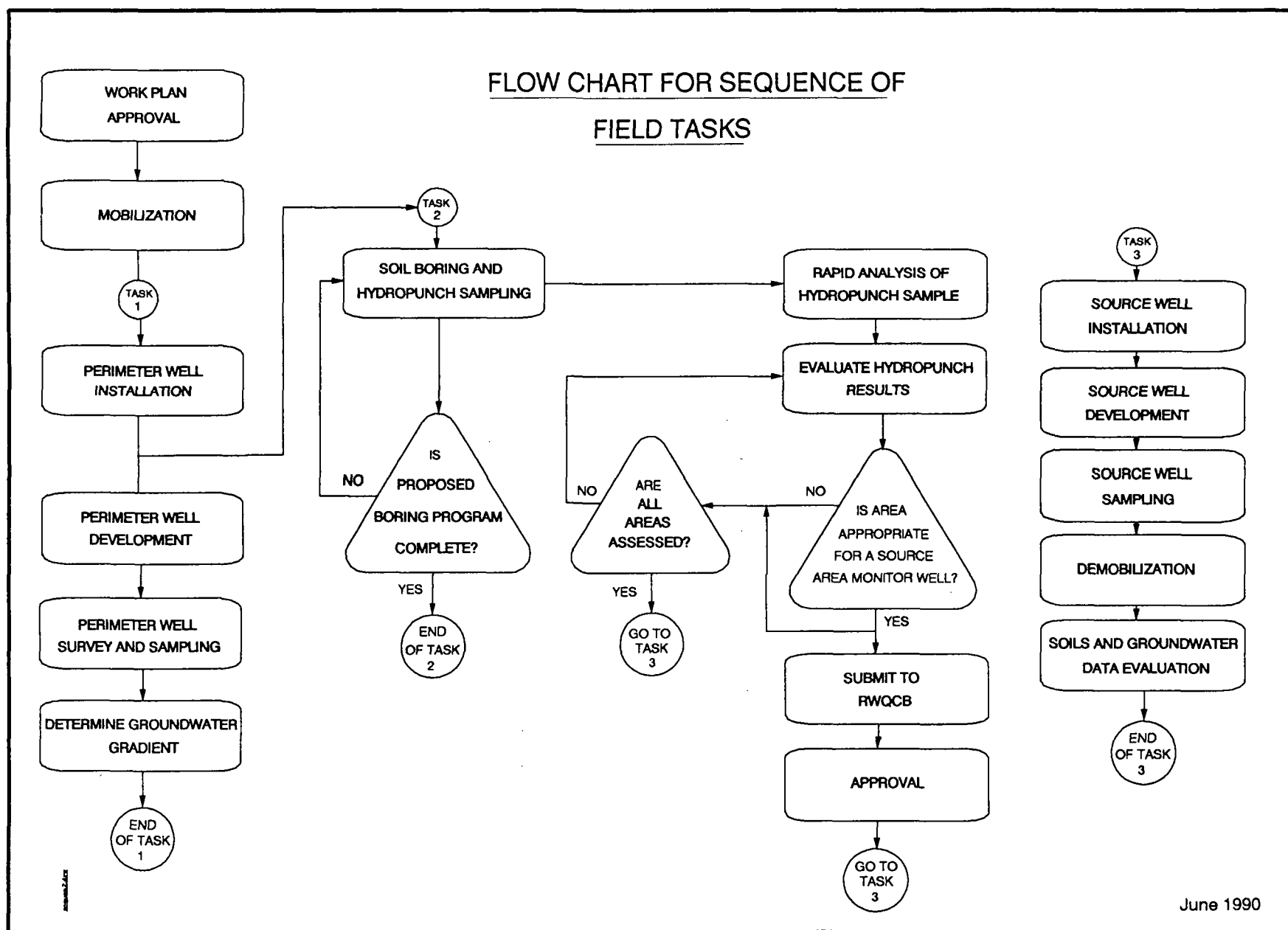


FIGURE 5-1: FLOW CHART FOR FIELD TASKS

5.2 GROUNDWATER INVESTIGATION OBJECTIVES

The initial groundwater investigation objectives will include: 1) assessment of aquifer properties of the upper water-bearing zone, 2) determination of the hydraulic gradient on the site, 3) characterization of the groundwater quality migrating onto the site and leaving the site, and 4) characterization of the groundwater quality in suspected source areas.

The groundwater investigation for the ITT Burbank site will begin with the compliance points. The perimeter wells will be developed, sampled, and surveyed during the soil boring program. Initial groundwater screening of the source area will be conducted as a part of the soil boring program. The groundwater screening samples will be collected with a HydroPunch sampler and analyzed for VOCs analysis using a quick turnaround. As the data is compiled, source monitor well locations will be identified and submitted to the RWQCB for approval. The final step of the program will be the installation of these source area wells.

5.3 FIELD INVESTIGATION TASKS

5.3.1 Perimeter Monitoring Wells (Task 1)

Five perimeter wells will be installed in the uppermost water-bearing zone as the first task of the field investigation (Figure 5-2). The wells will be installed to evaluate potential on-site and off-site migration of chemical residues and to define the site groundwater gradient.

As discussed in Section 3.2, the regional groundwater gradient trends south to southeast. However, groundwater elevations in wells at the IBC facility to the northeast indicate a westerly gradient. The five perimeter wells will be located to provide areal coverage based upon the suspected gradient. The need for additional perimeter wells will be evaluated based on results of this preliminary hydrogeologic investigation.

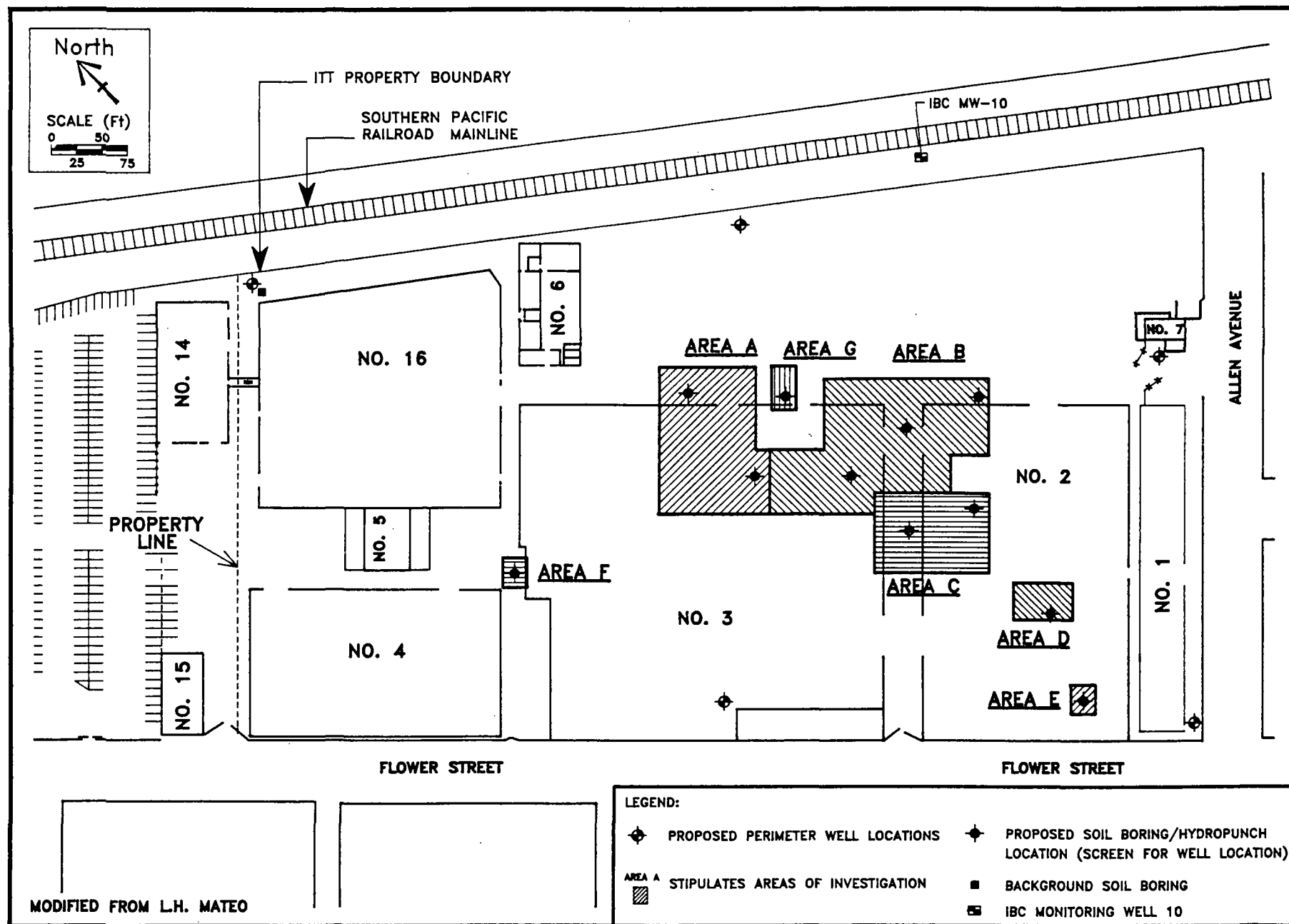


FIGURE 5-2: PROPOSED SOIL BORING AND MONITORING WELL LOCATIONS
ITT AEROSPACE CONTROLS - BURBANK, CA.

- The northeastern perimeter well will be installed along the fence-line and establishes an up-gradient monitoring point. The location may be side-gradient to the IBC facility, and possibly occurs within the lateral boundary of the IBC plume.
- The southeastern perimeter well will be installed near the guard shack (Building 7). Based on a southeasterly flow direction, this well is side-gradient to the Building 8 site and will monitor potential off-site migration, if any.
- The southern perimeter well is located in the southernmost point at the site and will monitor the quality of groundwater as it flows off-site.
- The western well will monitor a southwesterly flow direction. The field screening of this well will also provide information on the soils as relate to the 1,000 ng/ml soil-gas values.
- The northernmost perimeter well will monitor the water quality migrating onto the site. In addition, the soil results from the well boring will be used to establish background metal concentrations for comparison of site soil data.

5.3.1.1 Perimeter Wells Soils and Groundwater Analytical Program

All perimeter wells will be logged as described in Section 5.4.3.1. As the perimeter well location areas are not within known source areas, soil samples will be field screened using a PID. If head space readings are above ten times the ambient air background level, the soils will be submitted for VOC analysis. The pilot hole for the north perimeter well will be sampled for metals analyses every five feet to establish background levels in the soils. In addition, the southeast perimeter well adjacent Building 8 will be sampled from the surface to 15 feet for PCBs.

The perimeter wells will be developed and surveyed during the subsequent soil boring and HydroPunch sampling program. The perimeter wells, particularly at locations adjacent the IBC facility, will be initially inspected for floating product prior to well development.

The first round of groundwater sampling will consist of EPA 601 and 602. Additionally, PCB and TPH analyses will also be run on samples collected from the southeast well as this well is probably side-gradient to Building 8 and downgradient of the IBC facility.

5.3.2 Soil Borings

Eleven borings will be drilled and sampled to the water table to assess the lateral and vertical distribution of chemical concentrations in areas of investigation (Figure 5-2). The soil boring field methodology are described in Section 5.4.1. Proposed boring locations are based on previous soil sampling results and the soil-gas survey, and will address those areas identified in Section 4.

The following boring locations will be sampled to assess the areas of investigation:

- Area A - In order to assess the presence and distribution of VOCs in Area A, two borings will be installed. One boring will be located adjacent to the Bright Dip sump. The second boring will be located opposite the plating area of Building 3 (Figure 5-2). Samples will be analyzed for VOCs and PCBs. Due to the single occurrence of metals above the TTLC in this area, soils collected in the upper 15 feet will be analyzed for metals. In the event that elevated levels of metals are detected in the upper fifteen feet, then the archive samples for PCB may be analyzed.
- Area B - Three borings will be drilled to address this area (Figure 5-2). Area B was defined on the basis of the elevated soil-gas results. The borings are located at three soil-gas highs. Soil samples will be analyzed for VOCs, and

PCBs. TPH analyses will be run on the two borings located adjacent the previous fuel oil tank and waste oil room at the eastern corner of Building 3.

- Area C - To assess elevated soil-gas results in the Crib Room area, Area C, two borings will be advanced (Figure 5-2). One boring will be located in the alley and corresponds to a soil-gas high. The second boring will be drilled on the opposite side of the Crib Room. A boring could not be located within the Crib Room due to access. Soil samples will be analyzed for VOCs, PCBs, and TPH. The TPH analysis is recommended due to the presence of TPH in the sump located in the Crib Room.
- Area D - To address this area of investigation, a single boring will be conducted adjacent to the Parts Washer in Building 2 (Figure 5-2). This area contains elevated soil-gas concentrations dominated by TCE. Soil samples will be collected for VOCs, PCBs, and TPH analyses. The TPH analysis is recommended due to the elevated concentrations of TPH found in residue samples from the floor, sump, and trench.
- Area E - One boring will be conducted in the southern area of Building 2 to address Area E (Figure 5-2). This boring will confirm the previous soil results collected from boring 32 drilled by ALB. VOCs and PCB analyses will be run on the soil samples.
- Area F - This anomaly will be addressed with one boring located at the single soil-gas high detected in the Area F. Soil samples will be analyzed for VOCs and PCBs.
- Area G - One boring will be installed to the northeast of Building 3 in order to address the elevated soil-gas concentrations near the Compressor Room area and any potential impact from oil usage in the area. Soil samples will be screened for VOCs, TPH and PCBs.

The borings locations will be cleared with site personnel prior to drilling to avoid subsurface hazards with the facility. If any obstructions or access problems are incurred, the borings will be moved to the nearest feasible location.

5.3.2.1 Soil Boring Analytical Program

Table 5-1 lists the borings to be sampled and the specific analytical method which will be used to screen for suspected compounds. As discussed above, the PCBs will be screened in the upper 15 feet. Below 15 feet, samples will be collected and archived for possible PCB analyses. A discussion of the analytical methods, constituents screened, and detection levels is included in Section 5.4.

5.3.3 Source Monitoring Wells (Task 3)

An initial screening of the water-bearing zone in the suspected source areas will be conducted during the soil boring program. Groundwater samples will be collected using the HydroPunch sampling tool. Samples will be analyzed for VOCs by EPA 624 on a rapid turnaround. The analytical data from the HydroPunch sampling will be evaluated as received and used in conjunction with the gradient information determined from the perimeter wells to site the appropriate source area wells. Three to six monitor wells are anticipated in the suspected source areas for the initial hydrogeologic assessment and water quality characterization.

The determination of the source well locations will be based on the level of any VOCs identified and the previous soils and soil-gas information. Wells will be located in areas yielding the greatest concentration of chemicals in the groundwater. If the groundwater screening samples indicate elevated levels of differing constituents in a single area, wells will be located in areas exhibiting unique characteristics to address potentially separate sources. The goal will be to site the wells immediately down-gradient of the suspected source areas.

Table 5-1

Recommended Analyses for Soils for Source Area Borings

Area	Boring Location	Analyses	Method/List
Area A	• NE Section of A outside Bldg. 3 and excavation area	VOCs	8240
		PCBs ^a	8080
		Metals	Title 22 Metals
	• Southern Section of A near Bright Dip Area	VOCs	8240
		PCBs	8080
Area B	• Western Section of B in Welding Department Area	VOCs	8240
		PCBs	8080
		TPH	418.1
	• In Alley between Buildings 2 and 3	VOCs	8240
		PCBs	8080
		TPH	8015
	• SE Section of B outside of Building 2	VOCs	8240
		PCBs	8080
		TPH	418.1
Area C	• In Alley between Buildings 2 and 3	VOCs	8240
		PCBs	8080
		TPH	418.1
	• SE Corner of C inside Building 2	VOCs	8240
		PCBs	8080
		TPH	418.1
Area D	Southern Section Corner of D near Parts Washer	VOCs	8240
		PCBs	8080
		TPH	418.1
Area E	Center of E near Boring # 32	VOCs	8240
		PCBs	8080
		Cyanide	9010
Area F	Center of F near soil-gas location SG-30	VOCs	8240
		PCBS	8080
Area G	Adjacent to edge of Building 3	VOCs	8240
		PCBs	8080
		TPH	418.1

^a Note: PCBs analyses will be conducted from surface to 15 feet.

In order to avoid a remobilization of the field effort, the RWQCB will be informed of the proposed sites for source wells as each location is chosen. A brief justification will be submitted for review and approval.

5.3.3.1 Source Wells Analytical Program

Groundwater samples collected from the source area wells will be analyzed for EPA method 601 and 602. However, if the results of the preliminary screening with the HydroPunch indicates the presence of a parameter not screened for in the 601/602 analysis, an alternative method or modification will be proposed for the analyses.

5.4 SAMPLING METHODOLOGY

5.4.1 Soil Borings

Soil borings will be drilled to obtain chemical and lithological information and to access the upper water-bearing zone. The soil borings will be advanced with a drill rig using hollow-stem augers. Boreholes will be continuously bored for lithologic descriptions which will include the Unified Soils Classification System (USCS). In areas with greater concentrations of borings, subsequent boring will be logged at 2.5-foot intervals. Each boring will be logged under the supervision of a WESTON geologist registered in the State of California.

Discrete, undisturbed soil samples will be collected for chemical analysis at 5-foot intervals and at any significant change in lithology encountered using a California modified split-spoon sampler lined with 2-inch brass sleeves for soil retention. In areas where metals analyses are required, stainless steel sample sleeves will be substituted for brass. Sampling will continue at 5-foot intervals through the vadose zone to the water table (approximately 45 to 65 feet below ground surface). A HydroPunch tool will be utilized to collect a groundwater sample which is described in Section 5.3.2. The boreholes will be temporarily secured until the monitor well locations are finalized. Those borings which

are not completed as monitor wells will then be grouted to the surface. The boring holes will be grouted through tremie-pipe from the bottom using a cement/bentonite slurry.

Sample sleeves retained for chemical analysis will be covered with Teflon sheeting, capped, taped, labeled, and placed on ice for storage and shipment. Samples will be shipped to a California-certified laboratory overnight. Proper chain-of-custody documentation will accompany the samples throughout the collection and analysis process.

The drilling equipment, augers, and related tools will be steam cleaned between each location to avoid cross-contamination. Split-spoon samplers and sample sleeves will be cleaned using a standard decontamination sequence of Alconox detergent/water wash followed by a double water rinse and a final distilled water rinse. Samples collected for PCB analysis will include a hexane or methanol rinse prior to the distilled water rinse.

Air monitoring equipment used during the drilling will include a combustible gas indicator (CGI) and an HNu photoionization detector (PID). The instruments will be used primarily to monitor the work area for worker safety as outlined in the Site Safety Plan, but will also be used for qualitative screening of the soil samples. Samples to be submitted for chemical analyses will not be used for field screening.

5.4.2 HydroPunch Sampling

The HydroPunch is a sampling tool that allows the rapid collection of groundwater samples suitable for VOCs without the installation of groundwater monitoring wells. The tool is commonly used for initial screening purposes and will be employed primarily in areas where elevated soil-gas concentrations were identified, but as yet have not been verified as a potential source by a soil test boring. The tool is driven 2.5 to 4 feet below the augers into the undisturbed aquifer material using the slide hammer on the drill rig. The sample intake is retained in a water-tight housing while the tool is driven below the augers. Once the target depth is reached, the wire-line is retracted approximately 12

inches which allows groundwater to fill the HydroPunch tool under hydrostatic pressure. The sample intake is covered with a disposable stainless steel screen to filter out particulate matter.

Following retrieval of the tool, groundwater samples will be transferred to 40-ml VOC vials via a Teflon valve at the top of the tool. Care will be taken to minimize aeration of the samples during transfer. Samples will be properly labeled, placed on ice, documented on a chain-of-custody form and shipped overnight to a certified California laboratory for VOC analysis.

The HydroPunch will be disassembled and cleaned prior to each sampling attempt. Decontamination consists of an Alconox wash, double rinse and distilled water rinse.

Equipment blanks and duplicate groundwater samples will be collected for analysis for QA/QC purpose. A minimum of ten percent of the total number of samples will be collected for QA/QC purposes.

5.4.3 Monitoring Wells

5.4.3.1 Well Installation

Perimeter monitor wells will be constructed inside 10-inch (O.D.) hollow-stem augers. Each boring will be logged for lithologic control using USCS through the vadose and saturated zone until either a competent clay layer is encountered or the limits of the auger rig is attained. Care will be taken not to breach any competent layer encountered. Each boring will be logged under the supervision of a WESTON geologist registered in the State of California.

If during field screening the PID indicates the presence of VOCs ten times the ambient air background level, then discrete undisturbed soil samples will be collected for chemical analysis. Samples from the saturated zone will be collected for sieve analysis.

Source area wells installed in previously logged soil borings will then be continuously logged through the saturated zone with soil samples collected for sieve analysis. The boring will be advanced until a competent clay layer is encountered. Decontamination of the sampling equipment between each drive will be conducted as discussed above.

All the monitoring wells will be constructed inside the augers using 4-inch stainless steel wire-wrapped screen and schedule-40 polyvinyl chloride (PVC) casing. All joints will be flush-threaded. The top of the screen will be installed approximately 5 feet above the saturated zone. The proposed screen slot size will be 0.02 inch unless sieve analyses results indicate a different slot size is required. The well casing will be suspended and centralized so as not to rest against the sides or bottom of the hole prior to installing the gravel pack. The well material will be steam cleaned and inspected prior to installation.

The annular space will be filled with a clean, well-sorted sand (Monterey #3 or equivalent) approximately 3 to 5 feet above the top of the well screen. The sand will be poured slowly from the surface, kept at a level inside of the augers and sounded periodically with tape to monitor for bridging. A 2-foot minimum bentonite seal will be emplaced above the sand pack and the remaining annular space will be filled with a cement/bentonite grout. The seal will be allowed to set for a minimum of 24 hours prior to development.

At the client's direction, each well will be completed with a locking lid either flush-mounted or stand-up. Flush-mounted wells will include a diversified-type "Christie" box built slightly above-grade to avoid surface water accumulation around the well head. Aboveground completions will have guard post installed to protect the wellhead.

5.4.3.2 Monitoring Well Development

Following installation, the wells will be developed using surge block and pumping methods in order to draw the fine material out of the sand pack. Coarse material will be bailed from the well and then the well will be pumped until the water is clear and temperature, pH, and specific conductance stabilize. The minimum volume of water purged from the

well will be approximately five times the volume of water in the screen and blank pipe plus the saturated annulus (assuming a porosity of 30% for the sand pack). All downhole equipment will be steam cleaned between holes to avoid cross contamination. Development water will be containerized pending analytical results and determination of disposal options.

5.4.3.3 Water Level Elevations

Groundwater levels will be measured with an electric water level probe in all wells prior to sampling. The probe will be decontaminated with a deionized water rinse between wells. Measurements will be taken from a surveyed reference point marked on the top of the PVC risers. Water level measurements will be taken with ± 0.01 foot and recorded in the field notebook or on field sampling sheets.

5.4.3.4 Groundwater Sampling

The monitoring wells will be sampled following standard U.S. EPA protocols. Prior to sampling, the water level will be measured and the well volume will be calculated. If required, TPH, oil and grease samples will be collected prior to purging. Three well volumes will be purged using a non-aerating submersible pump. During the purge cycle, pH, conductivity, temperature, and visual observations will be recorded in the logbook or on sampling sheets to verify well stabilization. In order to collect a representative water sample, stabilization will be deemed complete when three successive measurements of field parameters are within 10%. Wells that pump dry will be evacuated once before being sampled. The pump will be decontaminated between wells using a detergent wash and tap water rinse unless dedicated pumps are installed. Purge water will be containerized pending analysis.

Samples will be collected with a Teflon bailer lowered on a line dedicated to an individual well, or from a dedicated pump. The VOC sample will be collected first and care will be taken to minimize aeration. Sample bottles will be laboratory cleaned and prepared with

appropriate preservatives. Metals samples will be filtered in the field prior to transport. All samples will be labeled, capped tightly, placed in plastic bags and shipped on ice overnight to the laboratory. Appropriate chain-of-custody procedures will accompany all samples.

The bailer, if used, will be decontaminated using a detergent wash, double rinse and distilled water rinse. Duplicate VOC samples will be collected at 10% of the total samples. VOC field blanks will be collected from the bailer. The filtering apparatus when used will be decontaminated between samples by recycling detergent solution followed by tap water and distilled water.

5.4.3.5 Engineering Survey

The monitoring wells will be surveyed by a State of California licensed surveyor and tied to an established benchmark. The benchmark location and survey date will be determined following the installation of the monitoring wells. The vertical survey will be accurate to 0.01 foot relative to mean sea level. A notch will be made on the top of the PVC casing so water levels are measured from the same reference point. Well locations will be determined using UTM coordinates.

5.4.3.6 Monitoring Well Permits

Prior to the commencement of drilling activities, a permit for each monitoring well must be obtained from the Los Angeles County Health Department, Water and Sewage Section. In addition to a fee of \$87.00 per well, details of the proposed well construction, a site map indicating exact locations of planned wells, and completed well permit applications must be submitted for approval. Processing of the well permits may take up to four weeks to complete. However, the County Health Department realizes the need to expedite permit approval, and verbal approval is generally granted from three to five working days after submittal of the appropriate paperwork.

The City of Burbank requires written notification prior to commencement of drilling activities. The letter must state where the well is to be located and why the monitoring well is being installed. No fee is required. Notification should be sent to:

City of Burbank
Department of Public Works--Engineering
275 East Olive Avenue
Burbank, California 91502

The City of Glendale also requires permission prior to drilling a monitoring well. No fee is required. The following information is requested: (1) location of proposed well, (2) depth of proposed well, (3) reason for installation of well, and (4) facility at proposed well location. Requests are to be submitted to:

City of Glendale
Public Service Department
119 N. Glendale Avenue, 6th Floor
Glendale, California 91206-4496
Attn: Water Services Administrator

Following completion of drilling, the City of Glendale requires submittal of the geologic logs for the wells.

In addition, monitoring wells will need to be registered with the State of California Department of Water Resources.

5.4.4 Waste Handling Procedures

All drill cuttings will be containerized in DOT approved steel drums, labelled and stored in the waste storage area on-site pending analysis. Personal protective equipment (PPE),

plastic sheeting and other disposable wastes generated at the drill site will be containerized with the cuttings and disposed of accordingly.

Rinsate generated from the decontamination of sampling equipment will be collected in containers approved by the DOT for liquids. The containers will be labelled, stored on-site and sampled for VOCs to evaluate disposal alternatives.

5.4.5 Field QA/QC Procedures

The overall quality assurance/quality control (QA/QC) objective for field activities and laboratory analyses is to produce data of sufficient quality to support evaluation of environmental effects. Standard procedures are used so that known and sufficient acceptable levels of accuracy, precision, completeness, representativeness and comparability are achieved for all data.

A comprehensive review of QA/QC procedures has been presented in the Site Characterization Report and Action Plan (WESTON, 1989) and is summarized below.

Critical aspects of the field QA/QC program include:

- Documentation.
- Decontamination.
- Collection of duplicates, splits, and blanks.
- Chain-of-custody procedures.

5.4.5.1 Documentation

All pertinent field information will be recorded in ink in a bound log book. This data will include at least the following:

- Date and time of entries.

- Personnel on-site.
- Activity and location.
- Field observations (i.e., soil descriptions, direct instrument readings, weather, unusual occurrences, water levels, volume and type of materials used).
- Sample information (time, depth, location, type of sample).
- Equipment calibration records.
- Levels of protection.
- Any other observations useful in reconstructing site activities.

5.4.5.2 Decontamination

Appropriate decontamination of field equipment is crucial to avoid cross-contaminating samples, particularly since analyses are conducted in the low parts per billion (ppb) range. Decontamination procedures include:

- Wash split-spoon samplers, sample sleeves, Teflon bailer and HydroPunch between samples with laboratory-grade detergent (e.g., Alconox).
- Double tap water rinse.
- Distilled water rinse.

Sampling in the PCB area will also include a hexane or methanol rinse. The equipment will be handled carefully following cleaning to avoid subsequent contamination by, for instance, hydraulic oil from the drill rig or material on the ground.

The hollow stem augers, bailers, swabs and other down-hole equipment will be steam cleaned between holes and checked for residual soil or other foreign material. Pumps and filters will be washed and recirculated with detergent solution and tap water between wells. Ropes or lines for the Teflon bailer will be dedicated to an individual well.

5.4.5.3 Duplicates, Splits and Blanks

To check the decontamination procedure and the laboratory QA/QC program, duplicates, splits and blanks will be collected periodically throughout the program. Duplicate groundwater samples and split soil samples will be collected at approximately 10 percent of the total samples. Groundwater field blanks will be collected at approximately 10 percent of the total sample volume from the Teflon bailer. Field blanks will be analyzed for the suite of analyses collected from the monitor wells. No soil field blanks will be collected. One trip blank per week will be submitted for VOC analysis.

5.4.5.4 Chain-of-Custody

The purpose of the chain-of-custody procedure is to document sample history from the time of collection, through transport, receipt and analysis. Any person accepting the responsibility for the samples will sign and date the form at the time of acceptance and relinquishment of the samples. These procedures are presented in detail in the Site Characterization Report and Action Plan (WESTON, 1989). A chain-of-custody form is shown on Figure 5-3.

5.4.6 Laboratory QA/QC

The laboratory conducting the chemical analyses will be certified by the State of California Department of Health Services for each of the required analytical methods. At a minimum, EPA sample holding times and conditions will be observed. At the request of the RWQCB, minimum laboratory QA/QC requirements will be met. These requirements include: field and reagent blanks, calibration check standards, matrix spiked duplicates, total recoverables, and laboratory quality control samples. All QA/QC will be reported and all analytical results will indicate detection limits and whether a chemical potentially exists. A comprehensive review of laboratory QA/QC procedures is presented in the Site Characterization Report and Action Plan (WESTON, 1989).

5.5 ANALYTICAL METHODS

Table 5-2 outlines the standard analytical methods which will be used to screen for parameters. The parameters listed have been identified in either previous soil samples or the soil-gas screening. Included in Table 5-6, are the lower detection limits for each analytical method and sample matrix, (i.e. soil, water). Quality Assurance/Quality Control (QA/QC) samples will consist of field duplicates and splits, field and trip blanks, laboratory duplicate samples, laboratory spikes, and laboratory blanks. QA/QC samples will comprise 10 percent of the total samples.

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WESTON
MANAGING RESPONSIBILITY & TRUST

Client Contact/Phone _____

ANALYSES REQUESTED

Date Collected

Discrepancies Between
Sample Labels and COC
Record? Y N

NOTES:

Special Instructions:

[illegible]

Table 5-2
Chemicals of Concern and
Analytical Methods

Analytical Methods	Chemicals of Concern	Limits of Detection*	
		Soil (ug/kg)	Water (ug/L)
EPA 8240/624	Acetone	10	10
	Benzene	5	5
	Bromoform	5	5
	2-Butanone (MEK)	10	10
	Carbon Tetrachloride	5	5
	Chlorobenzene	5	5
	Chloroform	5	5
	1,1-Dichloroethane	5	5
	1,2-Dichloroethane	5	5
	1,1-Dichloroethylene	5	5
	Ethyl Benzene	5	5
	Methylene Chloride	5	5
	Tetrachloroethylene	5	5
	1,1,2,2-Tetrachloroethane	5	5
	1,1,1-Trichloroethane	5	5
	1,1,2-Trichloroethane	5	5
	1,2-Dichloroethene (total)	5	5
	Trichloroethylene	5	5
	Toluene	5	5
	Vinyl Chloride	10	10
	Xylenes (total)	5	5
	Freon-11	10	10
	Freon-113	10	10
Modified 8015	Diesel	17000	500
CAMWET-Title 22/ EPA 200.7	Antimony	12,000	60,000
	Arsenic	12,000	10,000
	Barium	2,000	100,000
	Cadmium	20	1,000
	Copper	5,000	25,000
	Chromium	2,000	10,000
	Lead	1,000	3,000
	Mercury	50	200
	Nickel	8,000	40,000
	Silver	2,000	10,000
	Vanadium	2,000	10,000
	Zinc	10,000	50,000
EPA 9010	Cyanide	1,250	10,000
EPA 8080/608	PCB 1016	0.5	80
	PCB 1221	0.5	80
	PCB 1232	0.5	80
	PCB 1242	0.5	80
	PCB 1248	0.5	80
	PCB 1254	1	160
	PCB 1260	1	160

* Based on a dilution factor of 1

Table 5-2 (continued)
Chemicals of Concern and
Analytical Methods

Analytical Methods	Chemicals of Concern	Limits of Detection*
		Water (ug/L)
EPA 601	Bromoform	0.5
	Carbon Tetrachloride	0.5
	Chlorobenzene	0.5
	Chloroform	0.5
	1,1-Dichloroethane	0.5
	1,2-Dichloroethane	0.5
	1,1-Dichloroethylene	0.5
	Methylene Chloride	0.5
	Tetrachloroethylene	0.5
	1,1,2,2-Tetrachloroethane	0.5
	1,1,1-Trichloroethane	0.5
	1,1,2-Trichloroethane	0.5
	trans-1,2-Dichloroethene	0.5
	Trichloroethylene	0.5
	Vinyl Chloride	0.5
EPA 602	Benzene	0.5
	Ethyl Benzene	0.5
	Chlorobenzene	0.5
	Toluene	0.5
	Total Xylenes	0.5

* Based on a dilution factor of 1

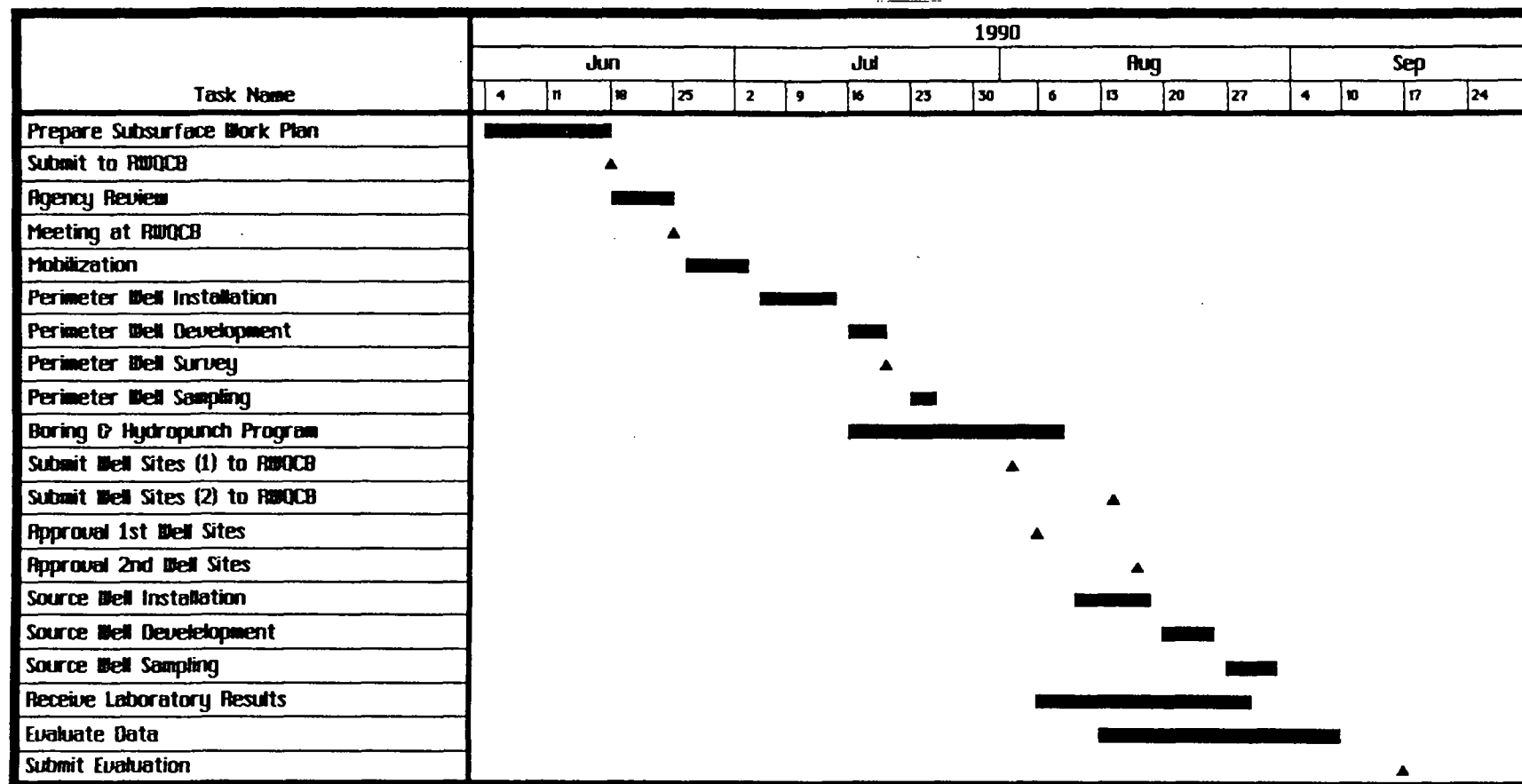
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SECTION 6

SITE INVESTIGATION SCHEDULE

The proposed site investigation schedule is presented in Figure 6-1. Implementation of the proposed tasks will begin upon approval of the Work Plan by the RWQCB.

ITT AEROSPACE CONTROLS SOILS AND GROUNDWATER INVESTIGATION



* Note: Schedule assumes no major delays in field work and timely approval of source area wells

FIGURE 6-1: SITE INVESTIGATION SCHEDULE

SECTION 7

REFERENCES

Blake, M.C., Jr., Campbell, R.H., Dibblee, T.W., Jr., Howell, D.G., Nilsen, T.H., Normark, W.R., Vedder, J.C., and Silver, E.A., 1978, Neogene Basin Formation in Relation to Plate-Tectonic Evolution of San Andreas Fault System, California: American Association of Petroleum Geologists Bulletin, v. 62, P. 344-372.

A.L. Burke Engineers, Inc., 1988 and 1989. Data compiled during site investigations.

California State Water Rights Board Referee, 1962, Report of Referee, California Superior Court, County of Los Angeles, No. 650079: v. 1 258 p., v. 2 appendices.

Department of Public Works, City of Los Angeles (LADPW), 1989, Draft Environmental Impact Report and Environmental Impact Statement for the City of Los Angeles Wastewater Facilities Plan. Prepared by LADPW and U.S. EPA, June 1989.

Gibson, D., ITT General Controls, personal communication, 5 September 1989.

Harding Lawson Associates, 1986, Site Assessment, Underground Tank Leakage, Aerospace Facility, Glendale, California. Consultant's report, HLA Job No. 17807,001.11.

Ingle, J.C., 1980, Cenozoic Paleobathymetry and Despositional History of Selected Sequences within the Southern California Continental Borderland: Cushman Foundation Special Publication No. 19, p. 163-195.

Leroy Crandall and Associates, 1988, Report of Preliminary Foundation Investigation. Consultant's report to ITT, LC&A Job No. A-88171.

Roy F. Weston, Inc., 1989, Site Characterization Report and Action Plan for ITT Facility, Burbank, California. Submitted to ITT, 2 November 1989.

Roy F. Weston, Inc., 1990(b), Soil-Gas Screening of the ITT Aerospace Controls, Burbank, California. Submitted to ITT, March 1990.

Roy F. Weston, Inc., 1990 (a), Summary of Asbestos and Residue Sampling of Buildings 1, 2 and 3. Submitted to ITT Aerospace Controls, March 1990.

Sharp, R.P., 1972, Geology, Field Guide to Southern California: Wm. C. Brown Co., Pub., Dubuque, Iowa, p. 11-16, 114.

Upper Los Angeles River Area (ULARA) Watermaster, 1989. Watermaster Service in the Upper Los Angeles River Area, Los Angeles County, 1987-1988. Submitted May 1989.

Yerkes, R.F., McCulloch, T.H., Shoellhamer, J.E., and Vedder, J.G., 1965, Geology of the Los Angeles Basin--An Introduction: U.S. Geological Survey Professional Paper 420-A, 53 p.